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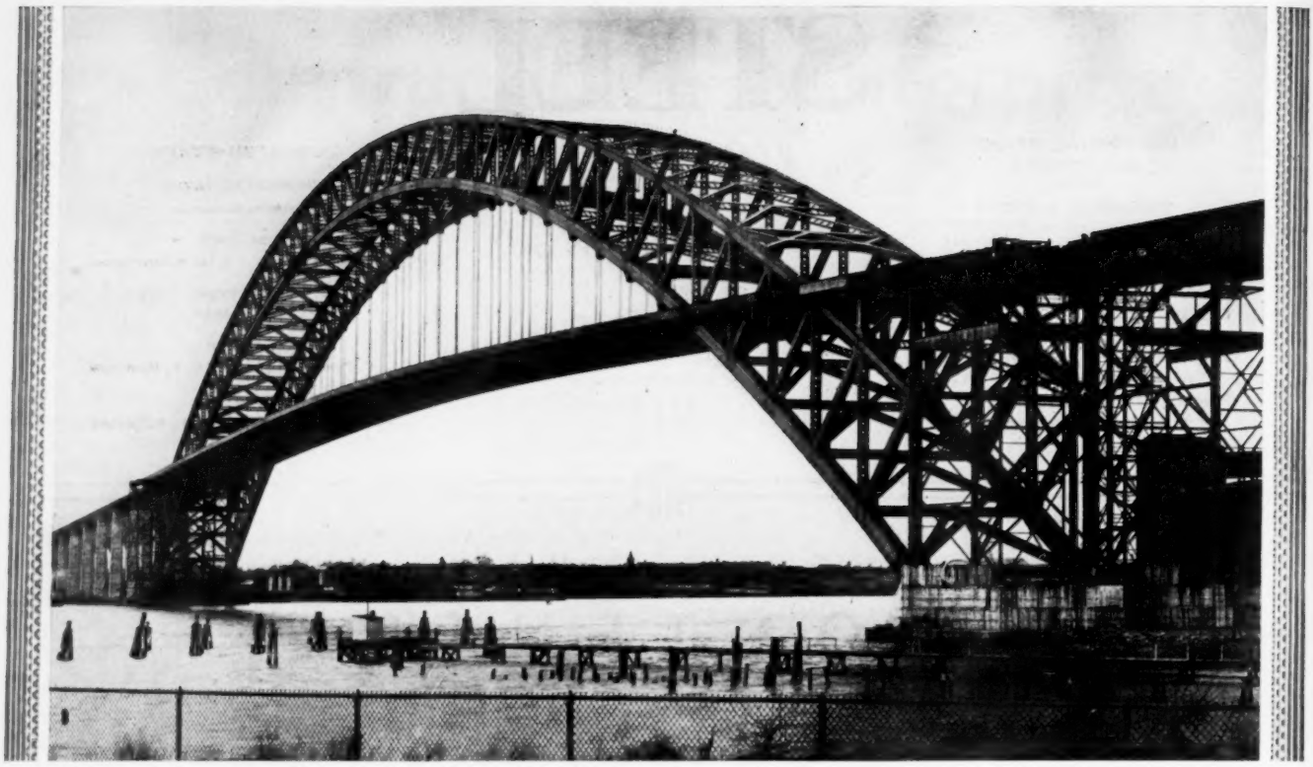
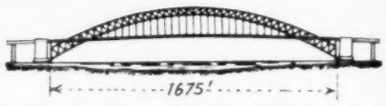


THE BAYONNE BRIDGE

.... has the LONGEST ARCH SPAN



Staten Island is now connected to the mainland on the north by *The Bayonne Bridge* which spans the Kill van Kull with an imposing Arch Structure, 1675 feet in length between centers of bearings —

THE LONGEST ARCH SPAN IN THE WORLD.

This bridge was built for the Port of New York Authority, the design and construction being under the direction of its Chief Engineer, O. H. Ammann. It was opened to traffic between Bayonne, N. J., and Port Richmond, N. Y., on November 14, 1931.

Unsymmetrical location of the channel and navigation regulations involved the erection of the arch with many unusual and difficult problems successfully solved by the engineers of the Bridge Company. Its suspended floor system, 150 feet in the clear above water level, supports the present 40-foot roadway and provides sufficient additional width for two future rapid-transit railway tracks.

The total length of the steel superstructure, including approaches, is 5780 feet and it required 26,000 tons of steel, of which 17,000 tons are in the Arch Span. The steelwork was fabricated and erected by the—

Erecting the Sixth Panel showing falsework support at Fourth Panel.

AMERICAN BRIDGE COMPANY

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Volume 90 Number 16

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

TO THE geologist Red Russia is a perfect appellation, connoting deposits of red iron ore as extensive and rich as are to be found in the world and adjacent to the heaviest concentration of a population of 165,000,000. Just returned from a survey for the Soviet government, an American expert presents (p. 19) the first authoritative and comprehensive report on Russia's resources. Her high-grade accessible iron ore he estimates at 2,265,900,000 metric tons; lower-grade isolated ore he appraises at many billion tons. Like the Lake Superior district, Russia-in-Europe boasts six great ranges, the formations are strikingly identical, the Lake Superior geologist would be at home anywhere in Russia.

Krivoi Rog Is Russia's Mesabi

Bonanza that the Mesabi range in Minnesota has been, Krivoi Rog in southern Russia is its equal in size, being rated at 1,025,000,000 tons, and its superior in quality. Although the Kertch peninsula is credited by the conservative geologist with only 500,000,000 tons, its potentialities are 4,200,000,000 tons. Magnitnaya, which the Soviet describes as a "second Gary," is astride 360,000,000 tons of unusually rich hematite, and although 1200 miles from coal is safe from aggression. Their eyes chiefly on the ground, American engineers nevertheless return with this observation: Russia is attempting the difficult—perhaps impossible—task of adapting American production technique while rejecting its concomitant social system.

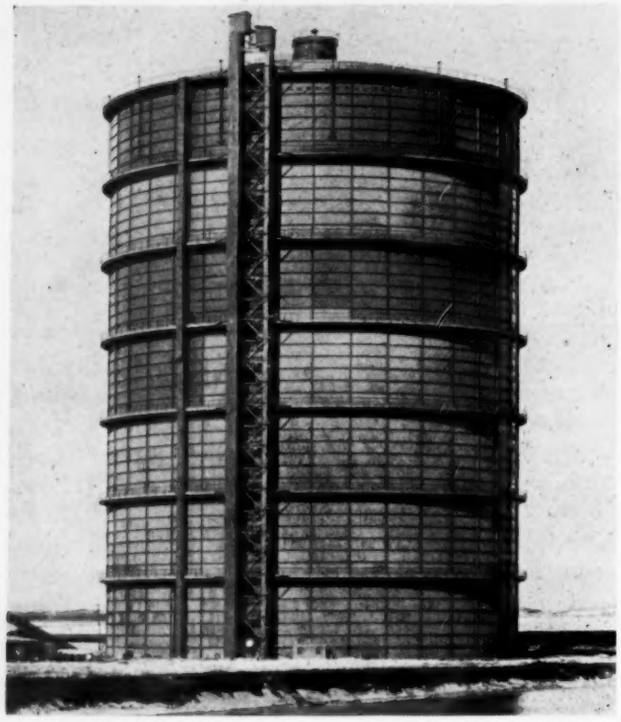
Accept Iron Ore; Balk at Manganese

Ore from Krivoi Rog in small quantities has been imported through North Atlantic ports without incurring opposition, but manganese ore from the Caucasus unceasingly irritates American producers. The latest pass at Russia emanates from Senator Oddie (p. 20), who would put a rider on the tax bill, now in the senate, imposing on all imports of manganese, whether as metal or in alloys, an excise tax equal to the present duty. This proposal must hurdle the stiff opposition to making the tax bill a tariff measure. . . . Sellers of ferromanganese in New York look to the automotive industry to stimulate (p. 59) slightly heavier specifying of ferromanganese.

U.S. Steel Takes Aboard New Pilot

For only the third time in its 31 years, the United States Steel Corp. changes presidents Tuesday when directors hold their April meeting. As Corey succeeded Schwab in 1903 and

Welding: From an oil painting by Garrit A. Beneker, advocate of the doctrine that "workmen are creative artists"; on exhibition at the Museum of Science and Industry, New York



Inside this 6,000,000 cubic foot Stacey-Klonne gas holder at Syracuse, N. Y., is a 500-ton floating piston. Details of this installation, using 2100 tons of plates and shapes for the holder alone, are on page 36

Farrell followed Corey in 1911, so Irvin in 1932 becomes pilot as Farrell takes off (p. 21). A dinner by the American Iron and Steel institute Thursday honors Farrell; on Saturday he departs for Honolulu. . . . Victim of circumstances beyond his control, the new Steel corportation president takes hold as unfilled orders (p. 64) are at a record low, totaling 2,472,413 tons on March 31.

When Red Changes to Black

Grim confidence that they will ride out the storm characterized the annual meetings last week of the second and third largest steel producers (p. 21). Freely conceding they are bending before the severest storm in industrial history, Bethlehem officials foresee emergence into a profit area when their operations snap back to 50-55 per cent. Republic, a younger organization, looks to the time when it crosses 40 per cent on the way up.

Autos Still First Line of Defense

By contrast, the steel operating rate last week was 22 per cent (p. 57), with the probability of a mild rise this week due principally to resumption of mills in the Birmingham district. . . . It is to the automotive industry, undoubtedly, that steel must look for any nearby gains (p. 49). In the next line of defense is structural material, which continues broad in inquiry. . . . When Ford on Wednesday sets up a schedule for May, probably 75,000 cars, steel demand seems certain to be sensitive (p. 24). Chevrolet and Plymouth continue notable for the steadiness of their operations. . . . Rail production increasingly stresses the heavier sections, the official report for 1931 (p. 23) disclosing 858,740 tons out of 1,157,751 produced being 100 pounds or over.

Overcome Handicaps in Galvanizing

Centrifugal extraction of galvanized coatings on malleable and cast iron pipe fittings usually has been accomplished with difficulty because most castings, or hollow work, are provided with cored interiors which form pockets for the accumulation of heavy zinc deposits. One remedy (p. 31) is a special handling apparatus which transfers the fittings from galvanized kettle to centrifuge without delay. . . . By means of the galvannealing process (p. 37), which involves heating the coating to a temperature above its melting point for a short period after the sheets leave the galvanizing pot, the tendency of the zinc to peel is overcome.

Economies Now Prized the More

Silent chain drives, applied satisfactorily to mill accessories like straighteners, shears and tables, have been adapted to continuous mill stands, an installation (p. 33) on a three-stand continuous mill proving conspicuously successful. . . . Roller bearings have been pitted against the plain type on a three-high 22-inch mill (p. 37), with a power saving of 48.5 per cent in favor of roller bearings at 82½ revolutions per minute. . . . Comparable efficiency is claimed for a new type of marine boiler (p. 39), designed for unusually severe service. . . . For automatic reversing control on an open-hearth furnace (p. 37) a saving of 12 per cent in fuel and $1200 in labor in a year is credited on a year's test.

Where Overhead in Steel Is Welcome

Twenty-seven million miles of telephone wire strung over 421,000 miles of pole lines in the United States entail, in servicing and in equipping 7200 miles of new pole lines each year, 16,000 tons of steel pole line hardware (p. 36). As much as a half ton of steel auxiliaries is carried by some poles. . . . Corrosion-resistant steel has won its spurs in expansion plates for highway bridges (p. 34), a number of bridges near Pittsburgh being thus equipped.

Russia's High-Grade Iron Ore, Over 2¼ Billion Tons, Rivals United States'

BY R. C. ALLEN
President, Lake Superior Iron Ore Association

THE government of Russia, as everybody knows, is trying to build an industrial system like ours. It thinks our production methods can be transplanted to Russia because the physical basis for industrialism, *i.e.*, the soil, minerals, timber, climates, vast extent of country, is almost, if not quite, as good as it is here.

It probably is, and it may be supposed that a people like ours under a government like ours would have produced in Russia the kind of civilization we enjoy in the United States. But it is not our civilization that the Russians want. They think to have merely our industrial technique, our science of producing vast quantities of excellent products at minimum expenditure of human labor.

They do not see any connection between that and the other aspects of our culture—political, economic, social and religious. They would take our production technique as the partner in an entirely new social-political system and expect to create in that way a society in which everybody will be fed, clothed, housed, educated and sanitated beyond anything we know or may hope for.

Russia is indeed a rich land, but how its people should organize to make the most of their natural riches is not our subject; I write only of the iron ore deposits.

Most people understand that an ore body, particularly an iron ore body, is valuable only in connection with the means of utilizing it in commerce. It is not enough to describe an iron ore deposit as such. Except to a limited number of scientists an ore body is interesting only in its human implications, its importance as a basis for the activities of people.

Resources Favorably Located

And so we must discuss the iron ore reserves of Russia in connection with their environment with respect to coal, fluxes, transportation, power and other natural resources, including populations, to show what is their importance to the economic aspirations of the country.

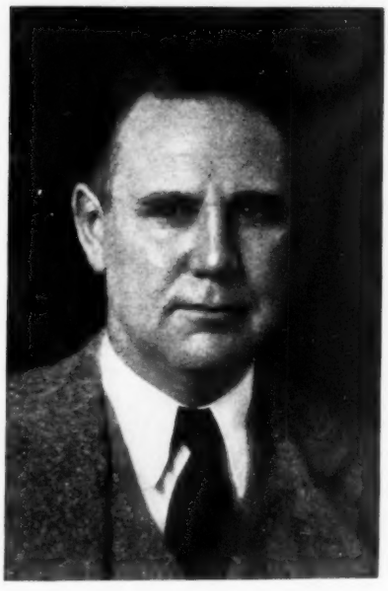
So many things extrinsic to an ore deposit affect its use: As an illustration, the iron ore deposits of Minas Geraes in Brazil are probably the world's greatest. This has been known for many years but nothing has been done with them because iron and steel from these ores, for a variety of reasons, can not yet compete in the world's markets, not even in Brazil.

But the greatest of the Russian deposits are in quite the opposite situation. They are in the south of European Russia near the Black Sea, in the midst of a heavy population, in one of the world's richest agricultural regions (but otherwise undeveloped), within easy reach of coke, fluxes, manganese, petroleum and water power.

This region long ago should have become one of the important industrial districts of the world. There are other important deposits of iron ore in the Ural mountain region, which also contains valuable deposits of a great many other minerals. The main difficulty in the way of creating an important iron and steel industry in the Urals is the remoteness of adequate supplies of good metallurgical coal.

Of local importance are the iron ores of the Tula and Lipetsk districts not far south of Moscow. In the Caucasus and at a number of points in Asiatic Russia there are other deposits of which little is known for lack of exploration and development.

For a period of two years the writer has been in contact with the work of 20 American engineers, one or more of whom have made repeated visits to the deposits, to which we shall refer, in the development of plans for their mining and utiliza-



American Engineers Appraise Russia's Ore Reserves

R. C. ALLEN, author of the accompanying article written for STEEL, is a geologist and engineer of broad experience, and an authority on the economics of iron ore. Following his graduation from the University of Wisconsin he was associated with the United States geological survey, and subsequently with private interests in western, Canadian and Lake Superior mining enterprises.

He was Michigan state geologist from 1913 to 1919, in which year he became vice president, Lake Superior Iron Ore association, Cleveland. Today he is president of the association, and vice president, Oglebay, Norton & Co., Lake Superior mine operators.

Two years ago the Russian soviet engaged this firm in an advisory capacity in developing its iron ore deposits. The two-year investigations by a staff of 20 American mining engineers and geologists, as well as Mr. Allen's personal observations in Russia, are summarized in the article, the first comprehensive report ever published concerning that country's ore reserves. It is of special interest for its analysis of Russia's resources in respect to iron and steel projects.

tion. Tonnage estimates are largely those of Russian geologists, but they have been checked in most instances by engineers of Oglebay, Norton & Co., Cleveland, and may be regarded as worthy of credence. If this statement serves any good purpose, let Messrs. Harry Angst, Fred Uhler, Murray Riddell, O. M. Schaus, and especially John M. Price, be thanked for it, for they are the authorities for much of the following data on South Russian ores, and all on the Ural region and central Russia.

South Russia: Krivoi Rog

THE industrial future of South Russia is dependent primarily on the working of the iron ores of Krivoi Rog (mainly) and of the Kertch peninsula in the Crimea in connection with coal of Don basin.

The fortunate location of the Krivoi Rog range, with the high quality and abundance of its ores renders it the most valuable of Russia's metallic resources. The total production to date is said to be in excess of 100,000,000 metric tons, the greater part of it from open pits. Open pit mining, however, must rapidly diminish and future mining will be mainly underground.

In connection with the transition to deeper mining through shafts, certain studies have been made, with the assistance of drilling, to determine the probable productiveness of the iron-bearing formations at deeper levels. The drilling has been confined almost to testing the downward extension of certain ore bodies beneath the pits, so far as I know all of the holes having an objective at or above 560 meters below the surface. More skill and better equipment is needed for deeper drilling.

So far as one may judge from this drilling, the general geology, and the ore bearing structures, there is no reason to doubt productiveness to great depths. Taking into account existing information, the following estimates seem to be sufficiently conservative:

High-grade iron ore in certain mines above a depth of 800 meters below surface

(000 omitted)

Group	Proven Ore	Probable Ore	Metric Tons
Schwartz	1,995	19,950	21,945
Leninsky	9,520	114,900	124,420
Krasnogvardetz	4,670	62,300	66,970
Kahanovich	6,290	72,540	79,830
Frunze	900	23,460	24,360
October	11,700	166,404	178,104
Liebknecht	10,370	75,880	86,250
Artemovsky	2,280	45,400	48,030
Dzerjinsky	25,380	250,900	276,280
Provda	17,960	63,000	80,960
Chubar	5,400	32,500	37,900
	97,815	927,234	1,025,049

Though these figures seem impressive, they much understate the general opinion held by the engineers

(*Please turn to page* 40)

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The Business Week In Washington

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This amendment has been submitted to the senate finance committee, now considering the tax bill passed by the house. It is expected that late in April the committee will report a revised bill to the senate.

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May Defer Pipe Meeting

Directors of the National Pipe and Supplies association recommend that this year's annual meeting, scheduled for Pittsburgh May 9-11, be deferred, which would be the first break in 25 years in the association's annual meetings.

Exports of Machinery Rise

Washington — Exports of industrial machinery in February, totaling $6,000,000, topped January by 21 per cent. Metalworking machinery exported in February was valued at $1,570,000, a 33 per cent increase over January. Both classifications,

however, fell below February, 1931, states the department of commerce.

Schwab Is Undaunted on Future of Bethlehem

Conceding that business conditions in the 27 years he has been identified with the Bethlehem Steel Corp. never have appeared more depressed, Charles M. Schwab, chairman, nevertheless declared, at the annual meeting at Newark, N. J., April 12: "I believe in the future of your great company. It is well managed and fundamentally well founded.

According to E. G. Grace, president, operations of the company in the first quarter averaged 23.4 per

William A. Irvin

cent. At 50-55 per cent a reasonable profit could be made, he estimated. Mr. Schwab will recommend payment of the preferred dividend when directors meet April 28. All retiring directors were re-elected: Mr. Schwab, C. A. Buck, O. G. Jennings, William C. Potter and Percy A. Rockefeller.

Republic To Profit at 40%

Republic Steel Corp. got a little more than its share of business in the first quarter and economies have been effected insuring a profit when steelmaking operations pass 40 per cent on the way up, declared Tom M. Girdler, president, at the corporation's annual meeting at Jersey City, N. J., April 13. B. F. Fairless, vice president, forecast larger Ford steel orders soon.

W. W. Hancock, treasurer, and Thomas F. Veach, an attorney, of Cleveland, were elected directors to fill vacancies.

Irvin Succeeds Farrell as President of Steel Corp.

NEW YORK—Next Tuesday, April 19, James A. Farrell retires after 21 years of distinguished service as president of the United States Steel Corp., and William A. Irvin succeeds, the fourth president in the corporation's 31 years.

One bows to the 70-year age limit, which a year ago he helped decree for Steel corporation employes; the other steps in with 12 potential years of active service ahead.

Mr. Farrell's retirement will be made official at the directors' meeting Tuesday, at which time Mr. Irvin and other executive officers of the corporation will be elected. All executive officers are chosen for one year.

Meeting Date Advanced

That the regular monthly directors' meeting this year, and henceforth, follows on the day after the annual stockholders' meeting in Hoboken, is permitted by a recent change in the by-laws of the Steel corporation.

Ordinarily, the directors' meeting falls on the fourth Tuesday of each month. However, inasmuch as certain directors always come up for election at the annual stockholders' meeting, it was deemed advisable to advance the time of the April directors' meeting to expedite organization.

George F. Baker, William J. Filbert, Junius S. Morgan Jr. and Thomas Morris will come up for re-election to the board, with another to be named to succeed the late Samuel Mather, Cleveland, whose term would have expired this year. There is some speculation that Mr. Irvin may fill this vacancy.

Compare Taylor with Gary

Corporation stockholders undoubtedly will have the opportunity at their meeting in Hoboken, Tuesday, of greeting Mr. Irvin and of bidding farewell to Mr. Farrell. The older stockholders will also see, in the person of Myron C. Taylor, one whose powers in the affairs of the Steel corporation now are comparable to those of the late Judge Elbert H. Gary, for in Mr. Taylor will repose the offices of the chairman of the board of directors, chairman of the finance committee and chief executive officer of the corporation.

However, Mr. Taylor is well-known to the regular attendants at these meetings for he has presided since he first became actively affiliated with the Steel corporation in December, 1927, as chairman of the finance committee.

William J. Filbert, recently named vice chairman of the finance committee, may participate more actively.

While Mr. Farrell retires from active leadership, it is believed he will continue prominent in the councils of the Steel corporation. He is a member of the finance committee and a director, his present term in this latter capacity expiring in 1934.

At the American Iron and Steel in-

James A. Farrell

stitute dinner in Mr. Farrell's honor at the Waldorf-Astoria hotel, New York, April 21, Charles M. Schwab, chairman of the Bethlehem Steel Corp. and president of the institute, will preside. Speakers will include Mr. Taylor; H. W. Phelps, president, American Can Co.; E. J. Buffington, president, Illinois Steel Co.; and George Gordon Crawford, president, Jones & Laughlin Steel Corp.

Election of Mr. Farrell as an honorary vice president of the institute would follow precedent.

On April 23 Mr. Farrell leaves New York for the National Foreign Trade council convention in Honolulu, sailing from Los Angeles April 29. He may sojourn on the Pacific coast for a while on his return from Honolulu.

Refractories Meeting Set

The American Refractories institute will hold its annual spring meeting in the William Penn hotel, Pittsburgh, May 18.

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According to E. G. Grace, president, operations of the company in the first quarter averaged 23.4 per

William A. Irvin

cent. At 50-55 per cent a reasonable profit could be made, he estimated. Mr. Schwab will recommend payment of the preferred dividend when directors meet April 28. All retiring directors were re-elected: Mr. Schwab, C. A. Buck, O. G. Jennings, William C. Potter and Percy A. Rockefeller.

Republic To Profit at 40%

Republic Steel Corp. got a little more than its share of business in the first quarter and economies have been effected insuring a profit when steelmaking operations pass 40 per cent on the way up, declared Tom M. Girdler, president, at the corporation's annual meeting at Jersey City, N. J., April 13. B. F. Fairless, vice president, forecast larger Ford steel orders soon.

W. W. Hancock, treasurer, and Thomas F. Veach, an attorney, of Cleveland, were elected directors to fill vacancies.

Irvin Succeeds Farrell as President of Steel Corp.

NEW YORK—Next Tuesday, April 19, James A. Farrell retires after 21 years of distinguished service as president of the United States Steel Corp., and William A. Irvin succeeds, the fourth president in the corporation's 31 years.

One bows to the 70-year age limit, which a year ago he helped decree for Steel corporation employes; the other steps in with 12 potential years of active service ahead.

Mr. Farrell's retirement will be made official at the directors' meeting Tuesday, at which time Mr. Irvin and other executive officers of the corporation will be elected. All executive officers are chosen for one year.

Meeting Date Advanced

That the regular monthly directors' meeting this year, and henceforth, follows on the day after the annual stockholders' meeting in Hoboken, is permitted by a recent change in the by-laws of the Steel corporation.

Ordinarily, the directors' meeting falls on the fourth Tuesday of each month. However, inasmuch as certain directors always come up for election at the annual stockholders' meeting, it was deemed advisable to advance the time of the April directors' meeting to expedite organization.

George F. Baker, William J. Filbert, Junius S. Morgan Jr. and Thomas Morris will come up for re-election to the board, with another to be named to succeed the late Samuel Mather, Cleveland, whose term would have expired this year. There is some speculation that Mr. Irvin may fill this vacancy.

Compare Taylor with Gary

Corporation stockholders undoubtedly will have the opportunity at their meeting in Hoboken, Tuesday, of greeting Mr. Irvin and of bidding farewell to Mr. Farrell. The older stockholders will also see, in the person of Myron C. Taylor, one whose powers in the affairs of the Steel corporation now are comparable to those of the late Judge Elbert H. Gary, for in Mr. Taylor will repose the offices of the chairman of the board of directors, chairman of the finance committee and chief executive officer of the corporation.

However, Mr. Taylor is well-known to the regular attendants at these meetings for he has presided since he first became actively affiliated with the Steel corporation in December, 1927, as chairman of the finance committee. William J. Filbert, recently named vice chairman of the finance committee, may participate more actively.

While Mr. Farrell retires from active leadership, it is believed he will continue prominent in the councils of the Steel corporation. He is a member of the finance committee and a director, his present term in this latter capacity expiring in 1934.

At the American Iron and Steel in-

James A. Farrell

stitute dinner in Mr. Farrell's honor at the Waldorf-Astoria hotel, New York, April 21, Charles M. Schwab, chairman of the Bethlehem Steel Corp. and president of the institute, will preside. Speakers will include Mr. Taylor; H. W. Phelps, president, American Can Co.; E. J. Buffington, president, Illinois Steel Co.; and George Gordon Crawford, president, Jones & Laughlin Steel Corp.

Election of Mr. Farrell as an honorary vice president of the institute would follow precedent.

On April 23 Mr. Farrell leaves New York for the National Foreign Trade council convention in Honolulu, sailing from Los Angeles April 29. He may sojourn on the Pacific coast for a while on his return from Honolulu.

Refractories Meeting Set

The American Refractories institute will hold its annual spring meeting in the William Penn hotel, Pittsburgh, May 18.

Industrial Men in the Day's News

Col. J. S. Ervin, President, Mackintosh-Hemphill Co., Pittsburgh

HE formerly was vice president and manager of sales for H. H. Robertson Co., Pittsburgh.

FOLLOWING service in the coast defense during the World war, he now is in charge of anti-aircraft defense for Pittsburgh.

HE has also been elected to the board of directors of the Mackintosh-Hemphill Co.

COL. J. S. ERVIN, former army officer and for years a sales executive of building materials for the steel industry, has been elected president of the Mackintosh-Hemphill Co., Pittsburgh, maker of steel and other metal-rolling mills. He was also elected to the board of directors.

His most recent affiliation was as vice president and manager of sales of the H. H. Robertson Co., Pittsburgh, engaged in the processing of steel building materials.

Born at Gibsonburg, O., in 1886, Colonel Ervin received his education in electrical engineering courses at Ohio Northern and Ohio State universities. Shortly afterward he went to work for the Des Moines Electrical Co., Des Moines, Iowa. His next position was as salesman for about two years with a General Electric Co. subsidiary, the Central Station Development Co., Cleveland.

In succession, Colonel Ervin was identified with: Indianapolis Light, Heat & Power Co., Indianapolis; the Tungstoloar Co., Cleveland; American Asphaltum & Rubber Co., Chicago, and the Pioneer Asphalt Co., Lawrenceville, Ill.

$n 1917 he enlisted in the coast artillery. He was mustered out of the service with the rank of major and today is a lieutenant colonel in the coast artillery reserve, being commanding officer of the 508th regiment, coast artillery, anti-aircraft division, which is charged with the formulation of anti-aircraft defense for the steel and munitions-producing centers around Pittsburgh.

In 1910 Colonel Ervin went to Pittsburgh as manager of the asphalt department of the H. H. Robertson Co. Two years later he was named assistant sales manager, a director of the company in 1925, sales manager and vice president in 1928.

He is a member of the A. S. T. M., among other affiliations, and finds recreation in golfing, power boating and fishing.

GEORGE S. CASE, president, Lamson & Sessions Co., Cleveland, was re-elected president of the American Institute of Bolt, Nut and Rivet Manufacturers, Cleveland, at its annual meeting, April 8, in New York.

Evans Ward, of Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., was re-elected vice president.

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Adam J. Bessolo, traffic manager of the Standard Steel Car Co., Butler, Pa., for the last eight years, has been made assistant to Charles B. Ellis, general traffic manager of the Gulf Refining Co., Pittsburgh, effective April 1.

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Mark S. James has been appointed assistant vice president of the Pittsburgh Steel Foundry Corp., Glassport, Pa., specializing in the sale of the company's special Pitaloy and Flintized steels. Richard Armstrong has been made metallurgist of the same company.

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Louis W. Greve, president, Cleveland Pneumatic Tool Co., Cleveland, has been elected president of the Cleveland chamber of commerce.

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Thomas Kaveny Sr., president, Herman Pneumatic Machine Co., Pittsburgh, has left on a business trip to Berlin, Paris and London. He will remain in Europe until the latter part of May.

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L. A. Stewart, formerly purchasing agent for the Olds Motor Works division of General Motors Corp., Detroit, has succeeded R. L. Kurtz as purchasing agent for Buick Motor Co., Flint, Mich.

F. J. McLaughlin, formerly purchasing agent for the gear and axle division, Detroit, of Chevrolet Motor Co., has been named purchasing agent for the Pontiac Motor Car Co., Pontiac, Mich., division of General Motors Corp.

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H. L. R. Emmett, works manager for the General Electric Co. at Erie, Pa., is to receive the *Groce de Cavalieri* at a presentation April 24. The decoration, which will be bestowed by Marquis Agostino Ferrante Di Rufano, general consular agent for the Italian government, is in recognition of the work Mr. Emmett has

done in this country in behalf of the Italian people.

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J. A. Apple, formerly with Ferro Enamel Corp., Cleveland, has joined the Louisville Enameled Products Co., Louisville, Ky.

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E. D. Seabright, formerly with Tennessee Enamel Mfg. Co., is now with the Ferro Enamel Corp., Cleveland, as a member of the laboratory staff.

Allen A. Apple, formerly with the Youngstown Pressed Steel Co., Youngstown, O., has become associated with the Ferro Enamel Corp., Cleveland.

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L. G. Rucquoi, Brussels, Belgium, director of the Steel Association of Belgium, was an honor guest at the American Institute of Steel Construction's luncheon at the Hotel Roosevelt, New York, April 15.

Obituaries

JOHN SHERIDAN, 46, purchasing agent for the Granite City, Ill., plant of American Steel Foundries, Chicago, died at Granite City recently.

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William Schlafge, 63, president, Meadville Machinery Co., New York, and a former general mechanical superintendent of the Erie railroad, died at Miami, Fla., April 6.

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William N. Agnew, traffic manager, Worthington Pump & Machinery Corp., New York, since 1910, and also assistant to the president for the past three years, died April 12 at New York.

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Nathan S. Sherman, 71, retired engineer and manufacturer, died at Seattle, April 2. He founded the Sherman Machine & Iron Works, Oklahoma City, Okla., operation of which he turned over to his three sons, who survive.

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William C. Gewalt, 44, vice president and works manager of the Twin Disc Clutch Co., Racine, Wis., died April 8. Previous to helping found this company he was connected with the Hamilton-Beach Mfg. Co., and Mitchell Motor Car Co., both of Racine.

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James M. Selden, 68, founder and former president of the Selden Co., Pittsburgh, manufacturer of industrial chemicals, died April 12 in Pittsburgh. The Selden Co. was formed in 1917 and now is a subsidiary of the American Cyanamid Co., New York. Mr. Selden was a director of the latter company.

Heavier Steel Rails Hold Lead in Tonnage; Little Bessemer is Used

CONTINUATION of the tendency of railroads to use heavier section steel rails is shown in statistics of the American Iron and Steel institute on production of steel rails in 1931. These figures show that practically 82 per cent of all rails produced in 1931 weighed 100 pounds or heavier per yard. Those weighing between 100 and 120 pounds were slightly in excess of those weighing over 120 pounds, though the difference in tonnage is not large.

Total steel rail production was 1,157,751 gross tons in 1931, compared with 1,873,233 tons in 1930, a decline of 38.2 per cent, compared with a loss of 31.19 per cent in 1930 from 1929. Of this total 199,011 tons were of less than 100 pounds weight per yard, 495,752 tons were of 100 to 120 pounds weight and 462,988 tons over 120 pounds.

Few Alloy Rails Rolled

Predominance of open-hearth steel is shown by the fact that 98.08 per cent were of that grade. All rails over 85 pounds per yard were open-hearth steel, bessemer being confined to lighter weights. Alloy-treated rails totaled 533 tons, of which 15 tons were produced in the electric furnace. All were of more than 85 pounds per yard.

Sixteen plants were engaged in rolling or rerolling rails, four less than in 1930. Pennsylvania had five, Alabama three, Indiana two and New York, Maryland, West Virginia, Ohio, Illinois and Colorado one each. One mill in Pennsylvania and one in West Virginia renewed or rerolled old rails.

Production in 1931 was the lowest since 1894, when the total was 1,021,772 tons. Practical cessation of building new lines, under regulation by the interstate commerce commission, accounts for much of this falling off in new work.

Dover Blast Furnace Is Dismantled as Scrap

I. Schumann & Co., Cleveland, recently purchased as scrap the Dover, O., blast furnace, formerly owned by the M. A. Hanna Co., and later the Valley Furnace Co. The stack, inactive for several years, now is being dismantled, work having started in February. Completion of the job is expected in three months.

The Dover furnace was built in 1854, remodeled in 1917 and relined in 1924. Its product was foundry, malleable and basic pig iron with an annual capacity of 150,000 tons.

Call for Bridge Entries

May 31 is the closing date for submission of entries for the annual bridge award for 1931 conducted by the American Institute of Steel Construction, New York. As in past years, there will be classifications for bridges costing under $250,000, between $250,000 and $1,000,000, and over $1,000,000. The jury will meet June 8 to consider entries.

Production of Rails by Processes

Gross Tons

Years	Open-hearth	Bessemer	Electric	Rerolled*	Total
1914	1,525,851	323,897	178	95,169	1,945,095
1915	1,775,168	326,952	.....	102,083	2,204,203
1916	2,269,600	440,092	.....	144,826	2,854,518
1917	2,292,197	533,325	.....	118,639	2,944,161
1918	1,945,443	494,193	.....	101,256	2,540,892
1919	1,893,250	214,121	50	96,422	2,203,843
1920	2,334,222	142,899	297	126,698	2,604,116
1921	2,027,215	55,559	5	96,039	2,178,818
1922	2,033,000	22,317	.....	116,459	2,171,776
1923	2,738,779	25,877	118	139,742	2,904,516
1924	2,307,533	16,069	.....	109,730	2,433,332
1925	2,691,823	9,687	.....	83,747	2,785,257
1926	3,107,992	12,533	.....	97,124	3,217,649
1927	2,717,865	1,566	.....	87,055	2,806,486
1928	2,580,141	2,718	438	64,196	2,647,493
1929	2,662,163	3,486	723	55,766	2,722,138
1930	1,834,933	2,137	45	36,118	1,873,233
1931	1,135,551	813	15	21,372	1,157,751

*Rerolled from old steel rails.

MIRRORS of MOTORDOM

DETROIT

DEFINITE improvement in the Ford situation and the steady gait of Chevrolet and Plymouth are laboriously but surely pulling automobile production out of the mire.

By late last week the two assembly lines at the Ford Rouge plant, on one 8-hour shift, were dropping off the new eights at the rate of 80 per hour, indicating a daily output of about 650. By the end of this week the daily rate, it is expected, will be close to 1000.

Unfilled orders for the eight are claimed to be nearer 400,000 than 300,000. On the Rouge payroll now are 77,000 men. Six open-hearth steel furnaces are on, an increase of two, and four bar mills are in operation. The new 400-ton open hearth is duplexing, using the remains of junked cars.

On April 20 a body schedule for May, believed to be for 75,000, will be set up. Prices have been taken on sheets, strip and other finished steel products. Current production continues to be largely financed, so far as steel is concerned, by the small pickup lots which have been placed from time to time and the 50,000 bodies placed and partially fabricated late last year.

Frame Schedule Wednesday

Two mills in northern Ohio and four near Pittsburgh have received, in the past few days, moderate releases, including "special" Ford sheets, fender stock, running board stock, cold-rolled and rustless steel. The April 20 schedule probably will be the forerunner of the most substantial Ford release in a number of months.

Branch assembly plants are well stocked, for all general purposes, on practically all parts except the engine Late last week Ford was ahead on frames and bodies and temporarily suspended shipments from Murray Body. It is claimed that the more serious difficulties encountered in casting the engine in one block have been overcome, also some delay occasioned by the new style of manifold and the change in valves.

Apparently Ford has passed the crest of stocking pig iron, the accumulation of which at the Rouge blast furnaces being estimated at 225,000 tons. Consumption by the gray iron foundries and the open hearths is practically at the point where this pile will be eaten into.

Ford Production Leads

In addition to the daily average of 650 or more eights, Ford last week was assembling close to 1500 of the fours. Some departments were operating only 3 days last week, others 6, but an authority places the total Ford output last week at 12,000.

On this basis Ford is again the premier producer of automobiles. Chevrolet, at 4 days for the week, was averaging slightly more than 2500 units a day. As for some weeks and in accordance with a fixed policy of the management, the variations in Chevrolet operations are slight.

Last week the schedule at the Fisher Body plant in Cleveland, on Chevrolet work, was materially increased, reflecting sales at the General Motors exhibition week. On April 13 the first cargo of steel this season arrived in Detroit from Chicago for Chevrolet. The scrap list of this interest also reflects great steadiness.

Plymouth holds rather steadily to a daily rate of 800 units, 5 days a week. Its orders for sheets, strip and bars have been attractive, one interest receiving 575 tons in two weeks. Many of Plymouth's recent orders have been tagged "rush." In the first quarter, Plymouth's shipments to dealers totaled 18,153, compared with 7687 in the corresponding quarter of 1931.

Of the other Chrysler units, DeSoto has slowed down somewhat following the flurry of stocking dealers with the new models and its daily rate has approximated 300 units. Dodge has been holding at about 350 units daily, 4 days a week, plus a small assembly of trucks, probably 125 a week. Chrysler proper has been averaging 3 days a week, 300 units a day. If Detroit can be termed optimistic on any automobile stock it is on Chrysler for the long pull.

Hupp may indicate an important change in its body policy shortly. Recently it concentrated its body work in the former Cleveland plant, in Cleveland. Now, it is said, it intends throwing its body business open to competition, its Cleveland plant to bid along with outside interests. From this it may be deduced that the Cleveland plant may bid for outside body work.

Some Hupp stampings are now made by the Mullins Mfg. Co., Salem, O., which has also been on some Studebaker work, Graham front and rear fender sets as well as Graham fender welds.

Murray Body, aside from making about two-thirds of the Graham stampings, recently received a contract for all Lincoln bodies, an additional Hudson sedan body and an additional Ford body.

Reopen Reo Body Work?

This supplements for Murray Body half of the Ford passenger frames, Studebaker chassis stampings, Pontiac mufflers, Reo bodies and three Ford passenger bodies. Due to a personnel change at Reo, other body makers than Murray may receive some Reo work.

Studebaker underwent a slight assembly reduction recently when compared with steadily maintained rate for a previous 60-day period. Last week the plant made about 180 to 200 cars daily. Houdaille-Hershey's ther-

mostatically-controlled shock absorbers will be used in all Studebaker lines soon, the idea having been pioneered for Rockne. Ford, incidentally, uses on its eight the same type as Rockne.

Studebaker continues to get its doors and front-end stampings from Budd at Philadelphia. Mullins is making a large share of the Studebaker stampings. Budd is getting all of Rockne's body stampings, except a convertible job that Briggs will make.

Willys-Overland's assemblies are difficult to determine, and the company's inventories are in an unbalanced state. A stamping interest understands specifications are on the verge of being issued for a new type Willys model.

Graham has ordered 1300 of a certain body stamping for early May delivery. Inasmuch as there is one to a car, the order when shipped will mean that Graham has assembled 13,000 cars so far this year, against approximately 19,000 for all of 1931.

Scale Output to Demand

Much backlog of admiration has accrued to the automobile industry within the past fortnight. In face of the most intensive sales drive the industry has witnessed, producers have not permitted unparalleled public interest to sway them from their cautious production policies.

General Motors and Ford, clocking over 30,000,000 people through the gates of their free shows week before last, in no way permitted such enthusiasm to alter their day-to-day production of automobiles. In other words, the lessons of 1929 and the building up of surplus stocks of finished cars have been learned. When, as, and if, the public's interest is translated into purchases, will the cars come rolling off the assembly lines.

Is Low on Flood Material

Copperweld Steel Co., Glassport, Pa., is low bidder, at $627,670, on about 2000 tons of noncorrosive material for flood-control purposes, bids being taken April 1 by the United States engineer at Memphis, Tenn. Specifications bar any material lacking a service record of at least 3 years and require substantially the same resistance to corrosion as commercially pure copper affords.

Los Angeles Reports Gains

Los Angeles chamber of commerce reports March employment making the third consecutive monthly gain, and increases in March over February in postal receipts, bank debits and building permits. The chamber states: "There is a tone of encouragement in practically all of the statistical records used as barometers of local business conditions."

Here and There in Industry

HASCO VALVE & MACHINE CO. has been formed by H. A. Schauer to take over the manufacturing division of the B. Hoffman Mfg. Co., 1819 West St. Paul avenue, Milwaukee, specializing in plumbing and steamfitting supplies and materials. The Hoffman company will continue its jobbing business. In addition to manufacturing valves and fittings for power plants, paper mills and the chemical industry, the Hasco line will be extended to include the dairy industry, featuring chrome-nickel steel valves for corrosion-resisting purposes.

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Clark Controller Co., Cleveland, has moved its Philadelphia office from 515 Atlantic building to 1473 Broad Street Station building.

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Shawinigan Products Corp., manufacturer of carbide, has moved its offices in New York from 110 William street to the Empire State building.

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Dings Magnetic Separator Co., Milwaukee, has appointed J. Max Lee, 114 West Seventeenth street, Los Angeles, its sales representative in southern California.

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Bethlehem Steel Co. has placed an order with H. A. Brassert & Co., Chicago, to provide its No. 8 blast furnace hot blast stoves at Johnstown, Pa., with Brassert graduated zoned filler brick inserts, converting the stoves to high efficiency.

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Norma-Hoffman Bearings Corp., Stamford, Conn., manufacturer of ball, roller and thrust bearings, has moved its New York offices from the Grand Central terminal to larger quarters in the Commerce building, 155 East Forty-fourth street.

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Geometric Stamping Co., Cleveland, has entered the Boston and Cincinnati-Dayton territories by appointing representatives in each. E. F. Wilmot of the E. F. Wilmot Co., 62 Ridgemont street, Boston, and H. A. Bell, Third National Bank building, Dayton, O., will represent the company in these districts.

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Perfect Circle Co., Hagerstown, Ind., is establishing a branch factory in Toronto, Ont., to supply the Canadian trade. The plant will have initial capacity of 100,000 rings a month, to be increased later to 150,000. Robert M. Thomas, formerly of the Thomas Mfg. Co., Newcastle, Ind., will be in charge.

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Taft-Peirce Mfg. Co., Woonsocket, R. I., has appointed Arthur H. Hall, 133 South Thirty-sixth street, Philadelphia, its sales representative. He formerly was sales manager of the Hendey Machine Co., Torrington, Conn. He will handle the company's gages, production and inspection tools and magnetic chucks.

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United Engineering & Foundry Co., Pittsburgh, has made an arrangement with Dominion Engineering Works, Montreal, Que., whereby the latter has been granted a license to manufacture rolling mill equipment and auxiliary machinery from United Engineering & Foundry Co.'s designs for use in Canada.

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O. D. Conover, formerly vice president of the Foundry Equipment Co., Cleveland, has established a consulting engineering service on layout and design of industrial plants and foundries. For ten years he was associated with the Austin Co., Cleveland, and previous to that was vice president of the T. W. Price Engineering Co., New York and Chicago.

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Dust Recovering & Conveying Co., Cleveland, has formed a foreign business department and adopted a policy of licensing foreign manufacturers to build and sell its equipment. For Britain and overseas dominions, except Canada, it has become associated with the Power-Gas Corp. Ltd., Stockton-on-Tees, Eng., gas and chemical plant engineer. An office has been established at 77 Rue des Tanneurs, Brussels, Belgium, under management of the engineers of Tevo Ltd.

Continue To Lower Costs

New York—While an additional cut in wage rates has not been formally considered by most steel producers, action would not be surprising. However, there is considerable opinion that the outcome of further economies instituted recently, such as the practical elimination of welfare work and reduction of personnel, may be awaited. The meeting of directors of the United States Steel Corp. Tuesday will be watched with unusual interest.

EDITORIAL

How 950 Executives View Business Policies

TWO studies recently completed under the auspices of distinctly different types of institutions afford an interesting insight into the thinking of industrial leaders on economic subjects. In each case the results of the inquiries reveal a curious mixture of reactionary and progressive thought.

The investigations into the economic attitudes of executives were undertaken by the college of engineering of Ohio State university and the industrial committee of the New England council. The Ohio State inquiry was directed to executives, most of whom were presidents or chairmen of corporations having sales in excess of $10,000,000 annually. Ninety-seven replies were received. The other survey was directed to the heads of businesses—large and small—in New England. Up to Feb. 1 a total of 853 replies had been recorded.

According to the returns from the New England questionnaire, industrial leaders will strive for improved profits in 1932 through strict economy and more energetic merchandising. In selling, 599 of the 853 executives who responded will rely heavily on reducing expenses other than wages and salaries. Hope of increasing the volume of sales is expressed by 528 of the 853. Introduction of new products will be tried by 419. A total of 371 of the 853 will adopt a policy of concentrating on their most profitable lines of products.

Policy for 1932 Embraces Economy and Concentrating on Profitable Lines

In manufacturing the greatest emphasis is placed on reducing production and operating costs. According to the replies, 528 are executing drastic cuts in production expenses, 455 are addressing their energies to the slashing of operating costs, and 305 declare they are going in for more extensive research in new products, improved equipment and methods, etc. Of the 853 total replies, 243 indicate a desire to install machinery of higher capacity, 218 will adopt new processes, and 179 will revise their manufacturing layouts.

On the question of planning for the future, 557 of 853 New Englanders believe each employer should accept definite responsibility for providing maximum security of employment for his stable force; 113 are opposed to this view. But on the question of compulsory unemployment insurance by state governments, only 46 voted "yes," while 525 opposed it.

New England executives are strongly in favor of modifying antitrust laws to allow firms to co-operate in stopping cut-throat competition. The vote is 723 against 51. Opinion on the Swope plan is about equally divided; 284 favor it and 279 are against it. Executives to the number of 405 think war debts should be scaled down, only 107 believe they should be cancelled and 244 would leave them as they are.

In reference to working hours, 504 New England executives favor shortening the week to conform to the work available; 74 are opposed to this view. This question was asked in the Ohio State inquiry in this form: "Toward what normal working period expressed in hours per day and days per week is industry tending?" Of the 97 who replied, 44 declared for an 8-hour day and a 5-day week. Only eight favored an 8-hour day and a 5½-day week. Four executives look for a 6-hour day, 5-day week.

Industrial Leaders Progressive in Thought, But Cautious of Untried Policies

In the Ohio state survey, executives were asked, "Do you believe in old-age pensions?" A categorical "yes" was voiced in 69 replies and a conditional "yes" in six. Seventeen replied "no," with or without reservations.

In reply to the question "Do you feel that labor unions have a function to perform in stabilizing and rationalizing industry as a whole?" 55 business leaders answered "yes," 12 "yes" with reservations, and 15 "no." To the same question 29 economists voted "yes" and one economist "no."

On the whole, the attitudes expressed in the two studies are about what would be expected. The policies advocated for 1932—namely reduction in operating costs and more energetic sales, coupled with concentration on the most profitable lines—are in harmony with what progressive leaders are doing everywhere. The views on unemployment insurance, showing a preponderance of opposition, and the divided opinion of the Swope plan, indicate that the broad questions of stability of employment still involve many uncertainties. The replies on pensions are surprising, in view of the difficulties which have arisen in the experience of many corporations.

It is evident that business executives are fairly progressive in their thinking, but at the same time they are cautious about those policies in which it has proved hidden dangers lurk.

THE BUSINESS TREND

Questions of National Policy Are Coming to Head

THE most cheerful thing that can be said of present conditions in the United States is that the nation is daily approaching nearer to a date when important decisions of general policy must be made—decisions which once adopted will make it easier for business to chart its course.

Many minds will function more clearly when strong forces unite with practical unanimity for either inflation or deflation. During the past six months the administration at Washington and a large majority of business leaders have been sponsoring a policy of mild inflation or "reflation." But opposed to this view are thousands of influential individuals who think the only way to get out of present troubles is to let everything go to the dogs, and then try to rebuild from the wreckage.

It is possible that something like a definite policy on this question will arise out of the developments of the next few months. Congress now is giving an exhibition of doubt, fear and confusion which is sharply in contrast with its positive action of emergency legislation when it first convened. It is incurring responsibility for irreparable harmful acts, but in the process is arousing the nation, which is a good sign.

The bonus issue, which started out as an issue primarily affecting war veterans and tax payers, now promises to develop into a discussion of regulating the value of the dollar. Manipulation of currency by congress would be extremely dangerous. Fortunately the danger is recognized and will be fought vigorously.

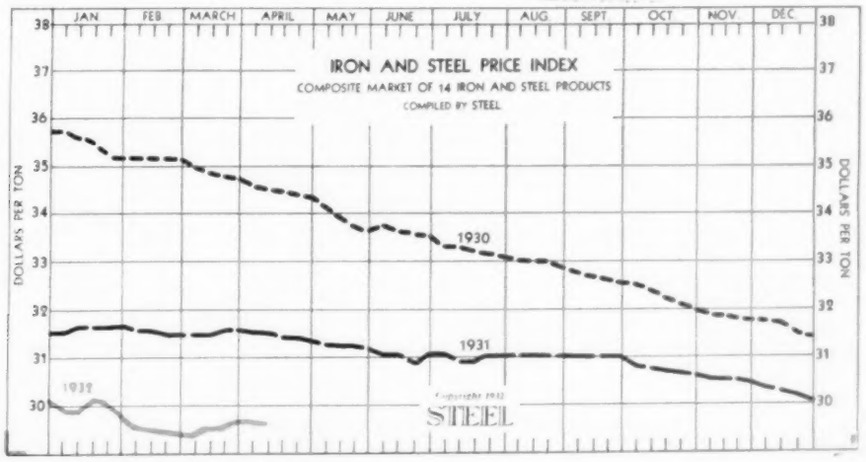
Conditions in Europe, which are slightly more encouraging than a month ago, are bound to come to the front again as a factor in the outlook in the United States. The matter of reparations will soon call for decisive attention.

Signs of Approaching Improvement Are Dimmed by Drastic Adjustments

Promise of a slight improvement in business during the next few months is partially offset by the severity of adjustments now in progress. Many companies still are scaling down operating forces, and in addition are revising their capital structures. It is believed that reorganizations and recapitalizations will be prevalent over the next year or more.

No change in the trend of important business barometers is apparent. Industrial activity generally is at low ebb and prices of the majority of commodities still are sagging. The full effect of the drive for automobile sales remains uncertain, although the reports of orders still are encouraging.

Perhaps the brightest aspect on the business horizon is the faint glimmer of an improvement in the farm situation.

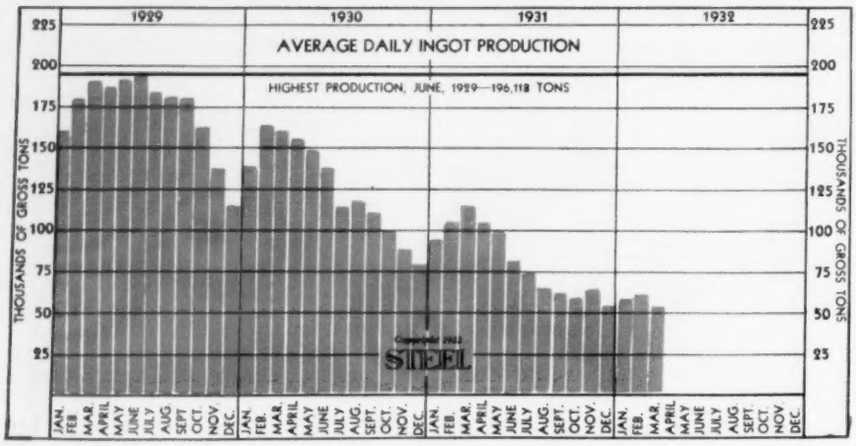


1932

Apr.	9	$29.74
Apr.	2	29.81
Mar.	26	29.81
Mar.	19	29.57
Mar.	12	29.55
Mar.	5	29.53

1931

Apr.	8	$31.67
Apr.	1	31.67
Mar.	25	31.71
Mar.	18	31.71
Mar.	11	31.61
Mar.	4	31.61



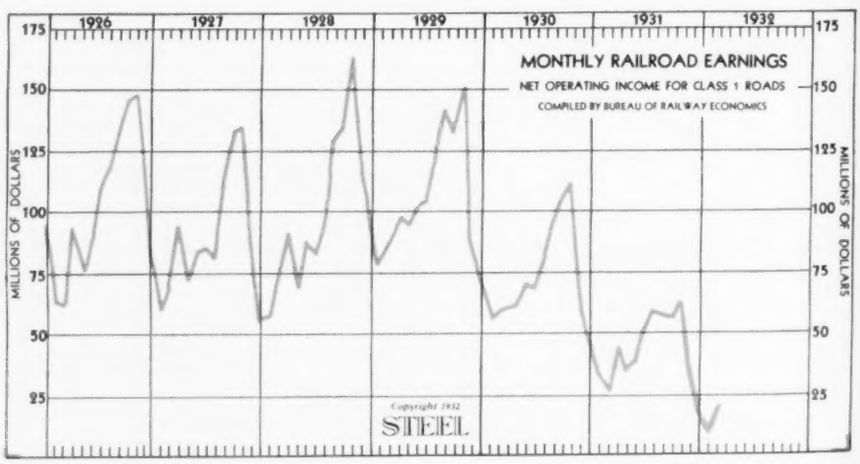
	1932	1931
March	52,253	115,138
Feb.	58,382	104,265
Jan.	56,203	91,063
	1931	**1930**
Dec.	50,092	76,136
Nov.	63,747	88,489
Oct.	58,977	99,724

Steel Ingot Rate Falls in March; Operations 24.68 Per Cent

With an operating rate of 24.68 per cent, the average daily output of steel ingots in March amounted to 52,253 tons, a shrinkage of 6129 from the average for February. This rate was less than one-half of the 115,138 tons produced daily in March last year, and with the exception of December, 1931, was the lowest point of this depression. Total production for the third month was 1,410,830 tons, a slight drop from the 1,459,547 tons produced in February. The output of open-hearth steel declined while that of bessemer gained in March. Total production for the first quarter of 1932 aggregated 4,331,667 tons compared with 7,954,645 tons for the same period last year.

Railway Earnings Gain in February; 1.35 Per Cent on Investment

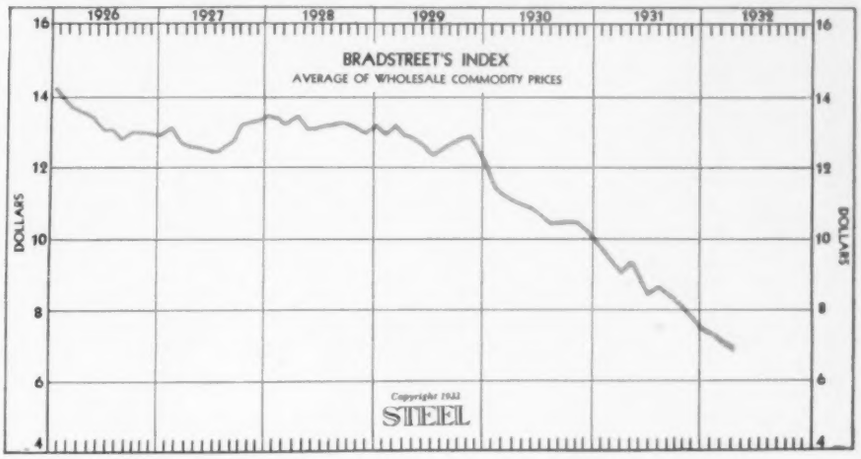
For the month of February, the net railway operating income of 167 class 1 railroads amounted to $22,042,614, which was at the rate of return of 1.35 per cent on their property investment. According to the Bureau of Railway Economics in February, 1931, net railway operating income amounted to $27,714,532 or 1.69 per cent on the property investment. Operating expenses in February this year totaled $211,109,274 compard with $272,142,372 in February last year or a reduction of 20.6 per cent. Seventy-six class 1 railroads operated at a loss in the first two months of 1932, of which 24 were in the Eastern, 15 in the Southern and 37 in the Western district.



Rail Earnings

Feb., 1932	$22,042,614
Jan., 1932	11,713,611
Feb., 1931	27,714,532

	1932	1931
April 1	$7.15	$9.22
March 1	7.31	9.71
Feb. 1	7.52	9.31
Jan. 1	7.73	9.51
	1931	**1930**
Dec. 1	7.91	9.84
Nov. 1	8.09	10.06

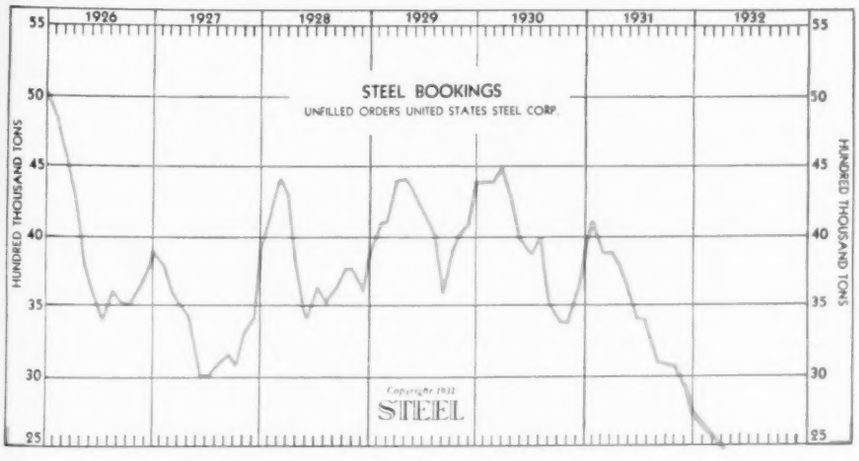


Wholesale Commodity Price Index Continues Downward Course

For the eight consecutive month, Bradstreet's price index of wholesale commodities continued downward. On April 1, the index stood at $7.15 as compared with $7.31 a month ago. However, this decline is approximately 0.4 per cent less than that which occurred between February and March. The current price is the lowest it has been since July, 1899, and greatly below the normal level which existed prior to the World war inflation period. Among the 106 commodities whose prices are listed in the index 17 increased, 37 declined and 52 remained unchanged. Last month, 13 advanced, 36 declined and 57 remained unchanged.

Backlog of Steel Bookings Shrinks For Twelfth Consecutive Month

The backlog of unfilled orders of the United States Steel Corp. declined 73,216 tons in March and at the end of the month totaled 2,472,413 tons. This drop in March compares with an increase for the same month last year of 30,136 tons, and an expansion of nearly a hundred thousand tons for the third month of 1930. The corporation's report for March marks the twelfth consecutive monthly decline. The largest total of unfilled bookings ever reported by the company was 12,183,083 tons on April 30, 1917. Automobile companies have thus far failed to place sufficient orders to maintain a higher rate of activity in the steel industry.



Million Tons

	1932	1931
March	2,472	3,995
Feb.	2,545	3,965
Jan.	2,648	4,132
	1931	**1930**
Dec.	2,735	3,943
Nov.	2,933	3,639

	Per Cent
Mar., 1932	43.1
Feb., 1932	54.8
Mar., 1931	89.4

Barometer of Machine Tool Orders Declines in March

According to the report for March received from the National Machine Tool Builders' association, the three months' moving average of machine tool orders has declined to 43.1 per cent. Following the brief recovery made in January, the moving average dropped to 54.8 in February and with the current figure showing a further decline, March will mark a new low point. During the first quarter last year the trend was showing gradual improvement from 65.3 in January to 89.4 in March. Demand for machine tools at the present time is reflecting the low state of business in general, and tool builders are keenly interested in the success of various campaigns which are in progress in the automobile industry.

Freight Traffic Recedes Again in First Week of April

Loadings of revenue freight for the week ending April 2 totaled 544,961 cars, according to reports from the car service division of the American Railway association. This was a reduction of 16,157 cars below the preceding week, 182,891 cars below the corresponding week in 1931 and 363,098 cars under the same period two years ago. Coal loadings were largely responsible for the loss shown this last week with a decrease of over 22,000 cars below the preceding week, while gains were reported in shipments of miscellaneous freight, merchandise in less than carlots and grain products. All districts reported reductions in the total loading of all commodities compared with the same week in 1931 and 1930.

	1932	1931
April 2	544,961	727,852
March 26	561,118	740,079
March 19	584,634	744,253
March 12	575,481	733,580
March 5	559,439	723,215
Feb. 27	535,498	681,221

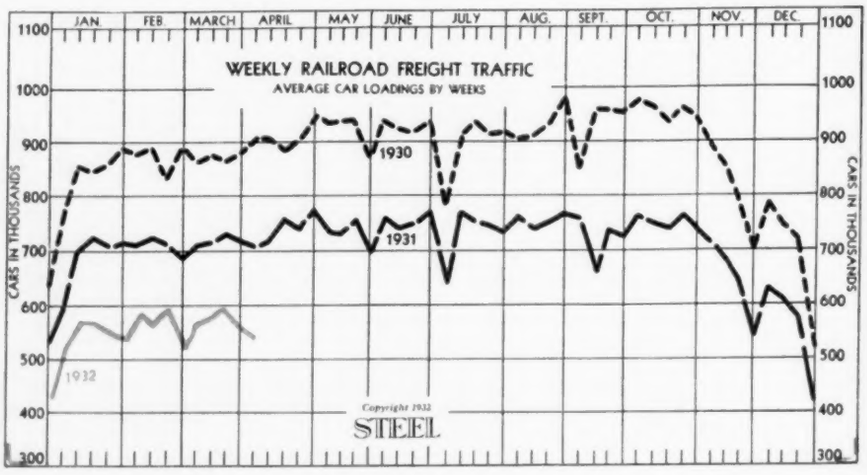


FIG. 1 — Handling system and centrifugal equipment in actual production in plant producing galvanized malleable pipe fittings

Centrifugal Galvanizing Process Is Adapted to Hollow Work

BY K. P. ROLSTON

General Manager, Acme Engineering Co., Pittsburgh

MALLEABLE and cast-iron pipe fittings offer a peculiar problem in the hot-dip centrifugal extraction of their coatings due to the fact that the majority of these castings are provided with cored interiors which form pockets for the accumulation of heavy zinc deposits. Articles falling within this category usually are called "hollow work" to designate them from the normal run of small galvanized parts such as threaded bolts, washers, drop forgings, etc., which do not possess depressions or cavities. Methods by which pipe fittings are centrifugally extracted differ only in certain details from the same operation performed on less difficult pieces, but the technique and the equipment employed play an important part in obtaining a high quality of finish.

The centrifugal galvanizing process (STEEL, 1931, April 2, p. 39; April 16, p. 39; and April 30, p. 35), a development of the Acme Engineering Co., Pittsburgh, which has been employed with success on many other galvanized products, is now adaptable to requirements of the pipe fitting manufacturer in the securing of hot-dip galvanized coatings on the full line of production including the most difficult cavity work. The minimum of zinc is required in obtaining the highest grade finish, and the pocketing of spelter, which heretofore has been a problem of no mean proportion, is eliminated. The system forms the connecting link between the kettle and the centrifuge and reduces the man-handling of the castings and the containers to lowest point.

This system is a mechanical means of accomplishing that which heretofore has been attempted by hand. Two distinct types of apparatus are built—the hand operated, and the mechanically operated, units. Where production requirements are light the hand operated device is recommended, and for heavy tonnage the mechanical unit is offered. The system can be used in connection with kettles of any normal dimensions. Flexibility in handling ability permits keeping pace with the maximum production of the kettle.

The plan view, illustrated in Fig. 2, shows a complete arrangement for a production of but 2 tons per day, in contrast with Fig. 1, the view of a typical installation operating in one

of the largest pipe fitting manufacturing plants in this country. This company uses the pushbutton controlled electromechanical handler and produces a comprehensive line of malleable pipe fittings including everything from simple union parts to return bends.

The centrifugal system was developed after a complete study of the problems characteristic in a fitting plant, and the patented features embodied within its functions, analogical to the best practice in the manufacture of hand-dipped fittings, make its use desirable where the output is strictly limited or the quality of coating is doubtful. One of the features of major importance in this system is the actual transfer of the articles from one container to another before centrifuging. This is done rapidly and effectively and it is during this transfer that the excess spelter trapped within the cavities of the pieces is drained thoroughly and the molten metal returned directly to the kettle.

The transfer would not be feasible except for the special method of maintaining a uniform temperature of both containers used in making this transfer. The sequence of operations is as follows: The pipe fittings are loaded into dippers which are proportioned to accommodate a weight of castings equivalent to the net basket load capacity of the centrifuge. Normally this amounts to 50 pounds. The dippers are immersed in the spelter bath and remain therein until the contents have reached the temperature of the bath and accepted a complete coating of zinc.

The handling system, a combination of the two elevating devices, is located at the output end of the kettle and connects with the centrifuge spelter shield by a roller conveyor. The elevating equipment performs two distinct duties: First, it raises the dipper from the molten metal to the proper height for dumping; second, it swings the centrifuge basket from a position within the kettle to its normal operative position above the zinc bath. These operations function simultaneously at the will of the operator. On the hand-power units the elevation is obtained by means of a lever in the hands of the centrifugal machine operators. On the electromechanical equipment a pushbutton and mechanical thrustor handle the movement of members by which the dipper and basket are elevated. Either upper or lower position of containers can be maintained indefinitely. On the hand device a latch holds the mechanism up and on the mechanical unit twin pushbuttons either hold it at the top or the bottom of the stroke.

The principle of operation provides that the centrifugal basket be zinc coated, of an equal temperature and "wet," the same as the fittings within the dipper. This is obtained by keeping the dipper, filled with fittings, and the empty basket both within the bath until the moment of transfer. Immediately upon elevating the dipper and basket the contents are dumped from the former into the latter, and the centrifugal machine operator draws the basket down the conveyor by the use of a hooked rod, provided for that purpose. The basket is lifted into the centrifuge by the operator and after being centrifugally extracted, is removed and dumped into the water quench. The basket is returned and again submerged in the molten zinc. On productions up to 10 tons per day, only one basket is needed to accommodate the centrifuge. Above this tonnage two or more may be used, depending on the output. The fewest number of dippers and baskets should be kept in service at one time to prevent heat losses through radiation while containers are awaiting immersion in the bath.

Centrifuged pipe fittings cannot be extracted successfully unless suitable means of handling the fittings be adopted before centrifuging and after removal from the bath. In the previously described handling system excess spelter is drained from interior and exterior of all types of castings before the articles reach the centrifuge. The heated basket, coated with molten spelter, duplicates in every way the thermal conditions of the original container. The excess trapped spelter is removed and drained from the fittings in the transfer from dipper to basket, while the temperature of the fittings is maintained considerably above the point that assures correct extraction. The time of centrifuging is a matter of seconds.

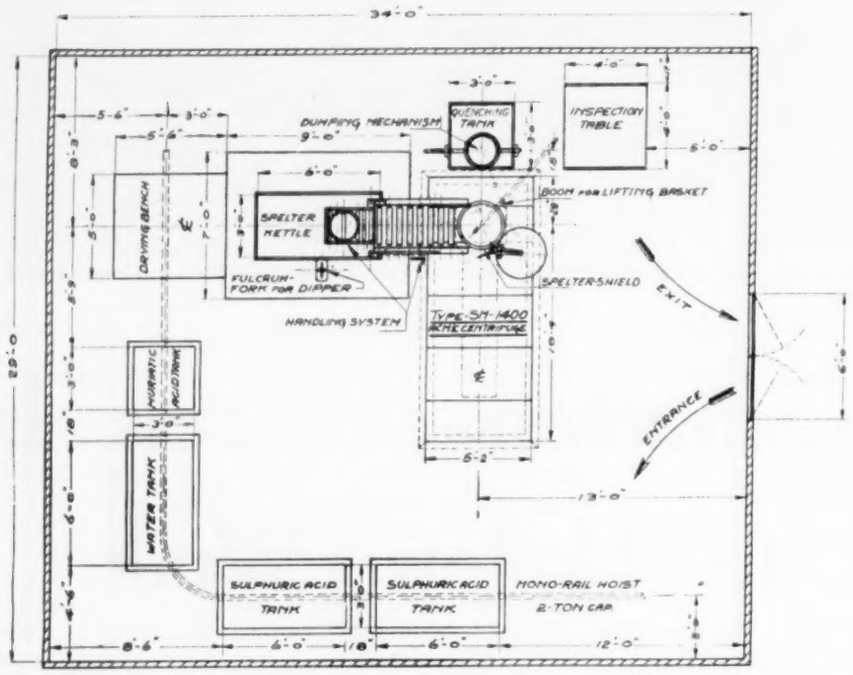


Fig. 2—Layout of handling system and centrifugal galvanizing equipment for production of 2 tons per day

Time Factor Important

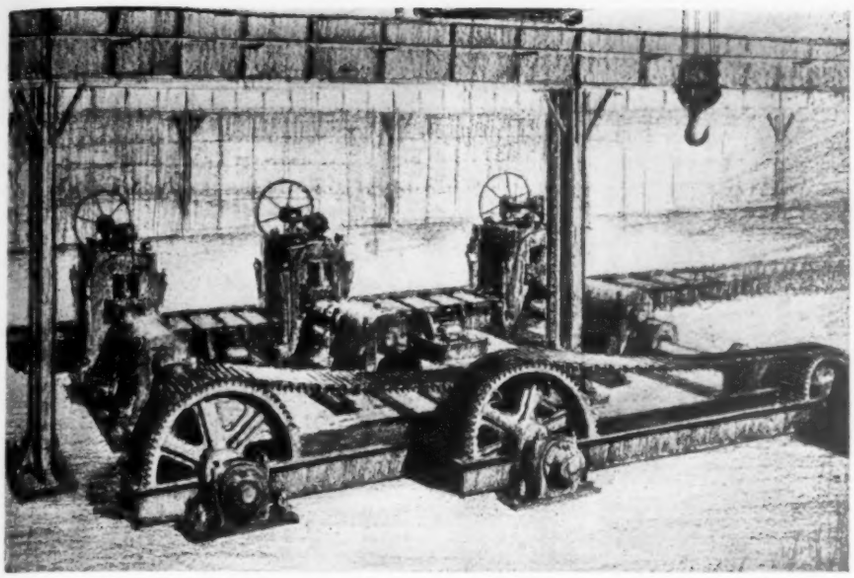
A typical installation of this centrifuge operating at a spindle speed of 510 revolutions per minute and functioning in connection with the handling system is producing excellently extracted, and uniformly coated, pipe fittings with an average centrifuging time of 2 seconds or a maximum of 17 revolutions of the container during this time without taking into account the loss in revolutions per minute during the period of acceleration.

It is self-evident that dispatch is the keynote of successful galvanizing of this class of material. The equipment used must be of rigid construction and mechanically equipped to function at the command of the operator. Experience has proved conclusively that sluggish acceleration and deceleration in processing the work is a contributory cause of ineffective extraction.

Gray Iron Institute To Hold Detroit Meeting

The Gray Iron intsitute will hold its mid-year meeting in Hotel Statler, Detroit, Tuesday noon, May 3, in connection with the annual convention of the American Foundrymen's association, it has been announced by A. J. Tuscany, manager. The program will consist of reports on technical, cost and merchandising activities. Gray iron foundrymen who are not members of the institute will be guests.

Directors of the institute will meet on the evening of May 2.



Artist's drawing showing application of chain drive to three stands of continuous mill

Silent Chain Drive Applied To Three-Stand Mill

BY P. V. STEVENSON
Manager, Pittsburgh Office, Morse Chain Co.

ALTHOUGH silent chain drives have been in use for several years on accessories or special steel mill equipment such as straighteners, shears, tables, and similar machinery, their application to continuous mill stands is a comparatively recent development. One of the first installations, in service now for some time, is operating successfully and fulfilling all expectations.

Probably most of the early chain installations started through replacement of belts, ropes or spur gears. For years chain drives have been used to drive from steam engines to mills or rolls, and from engines or motors connected directly to mills for auxiliary or finishing mills. Subsequently chain drives have appeared in designs of new mills and machinery and are no longer considered as replacement equipment.

The accompanying sketch shows a three-stand mill in a steel plant in the Pittsburgh district, originally intended for lay shaft and beveled gear arrangement to each stand of rolls. After some analysis a chain drive was designed by the Morse Chain Co., Ithaca, N. Y., and approved by the steel company.

With the chain manufacturer, the application of silent chain drives to mill stands was first a question of the use of standard equipment, that is, chain of design and size already manufactured and tried in actual service; second, standardization of sizes, keeping the sprockets and chains alike as far as practical; third, simplicity of installation, keeping in mind the erection and space required; and fourth, reasonably low cost consistent with the results to be accomplished.

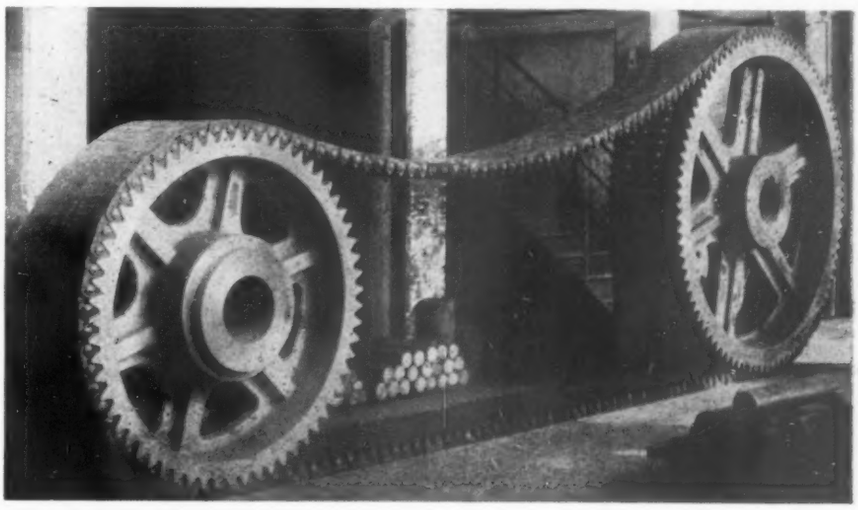
Requirements of the installation illustrated involved driving the first stand, or roughing rolls, from the second stand, with the latter in turn driven from the third stand. The third stand connects to the motor and in order to make use of some equipment on hand, a silent chain was not used here, although at some later date it may be installed.

The chain drive for the first stand is called upon to transmit from 300 to 1000 horsepower; while the chain from the third to second stand should carry 600 to 2000 horsepower since through it is transmitted the entire power for driving the three stands. Roll speeds ranged from 25 to 56 revolutions per minute.

20-Inch Chain Used

Consideration of these loads and speeds determined that standard chain of 3-inch pitch would be suitable, this pitch being in use on a number of single mill drives. The differences in power and speeds ordinarily would be handled with different width chains but it was discovered that by using the same width of chain on both drives and sprockets with the same number of teeth, the design would be simplified and the cost lowered. Preliminary design contemplated the use of chain 16 inches wide for the lighter drive and 20 inches wide for the heavier drive, these widths being changed later to 20 inches each with only two sizes of sprockets.

The sketch of this installation shows the approximate appearance of the drives with the upper halves of cases removed. The setup is simple, with no bed plates and with the bearings carried separately on the foundations. Elaborate shaft mountings, thrust bearings and bevel gears are avoided as are large gear trains with their bed plates. With this arrangement, the center distances may be varied easily and inexpensively. Speed ratios may be changed by the change of one sprocket. When repairs or renewals are needed, the chains



One of the silent chain drives before shipment to the steel mill

may be repinned and put in condition without removal from the sprockets.

Lubrication is provided by small pumps driven by chains from sprockets mounted on hubs of the large sprockets. Oil reservoirs are in the bottom of the cases. The silent chain drives are claimed to cushion shocks, show little vibration, be efficient and quiet. A second illustration shows one of the drives before shipment.

Chrome-Nickel Steel Expansion Plates Used on Highway Bridges

CORROSION-RESISTING steels are finding a relatively large market in applications calling for wearing qualities rather than the decorative and appearance feature which has been such a well-known characteristic of this material. One of the important uses for chrome-nickel steel in the former classification is in the rather obscure role of expansion plates for bridges. An example of the extent of this application is seen in recent bridge construction in Allegheny county, Pa.

Numerous Installations

More than 125,000 pounds of chrome-nickel steel has been used in the form of expansion plates in various bridges built in the Pittsburgh area the past three years. The McKees Rocks bridge spanning the Ohio river required 16,000 pounds. The bulk of this material, however, was used during the construction of the Ohio River boulevard, a new roadway skirting the river and including ten bridges. In this latter work Rezistal KA2 chrome-nickel steel, furnished by the Crucible Steel Co. of America, was used for expansion plates of the various spans. Chrome-nickel steel was selected by the county engineers for this application because of its hardness and resistance to wear as well as on account of its corrosion-resisting properties.

Placed on Floor Beams

The Jack's Run bridge, the largest span on the Ohio River boulevard, is 802 feet long and required 640 chrome-nickel plates. These are ⅜-inch thick and vary from 12 to 29 inches long and from 5 to 10½ inches wide. The main slab plates, numbering 480, measure 14 x 10½ x ⅜ inches and 29 x 10½ x ⅜ inches, while the jack arch and facia plates are of smaller sizes.

The accompanying sketch illustrates a typical manner in which these plates are applied on this bridge. These are slab plates placed between the floor trough sections and floor beams and held in place by 1-inch studs. On one plate 29 x 10½ x ⅜ inches, located on the floor beam, rest two plates 14 x 10½ x ⅜ inches bearing the weight of ends of two floor sections. Clearance between the sections, closed at the surface of the roadway by bituminous filler, permits expansion and contraction of the sections.

Electrochemical Society To Meet in Baltimore

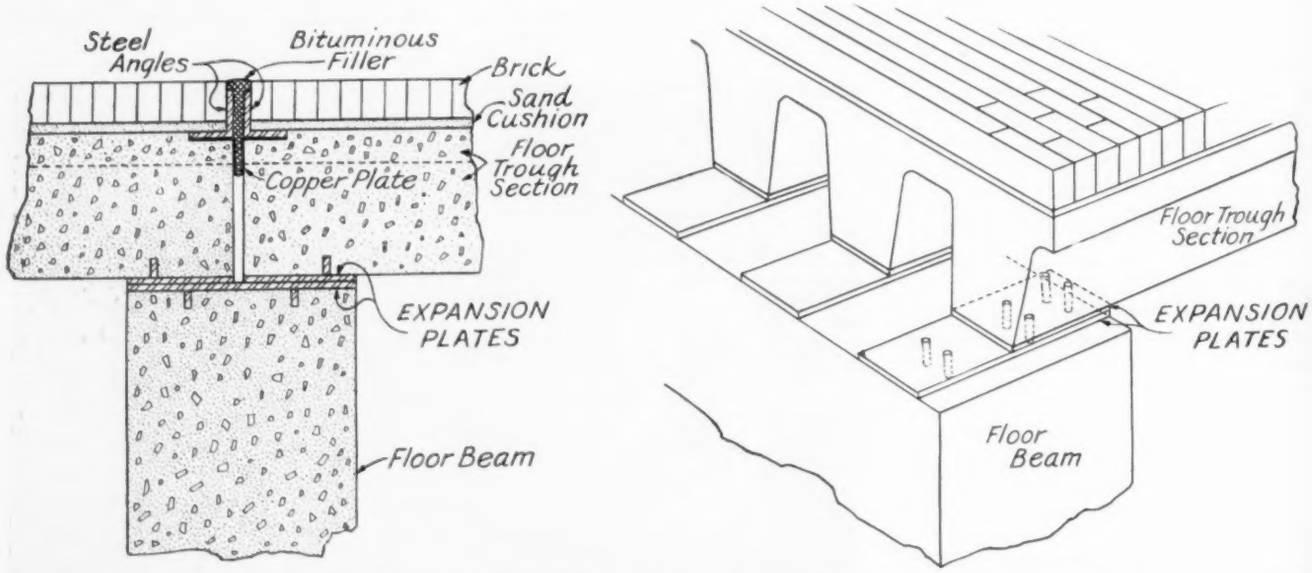
A symposium on the electric furnace and its products and a session on electrodeposition will feature the sixty-first meeting of the Electrochemical society in the Lord Baltimore hotel, Baltimore, April 21-23. Preceding the electric furnace symposium, Dr. John A. Mathews, chief metallurgist and vice president, Crucible Steel Co. of America, New York, will present the first Joseph W. Richards memorial lecture, his subject being "The Electric Furnace and the Alloy Age."

Among papers scheduled for the various technical sessions are: "The Electric Furnace in the Cast Iron Industry," by W. E. Moore; "New Electric Furnaces," by E. F. Russ; "Chromium Plating Steel for Wear Resistance at High Temperatures and High-Current Densities," by Arthur Willink; and "Distribution of Corrosion," by S. C. Britton and U. R. Evans.

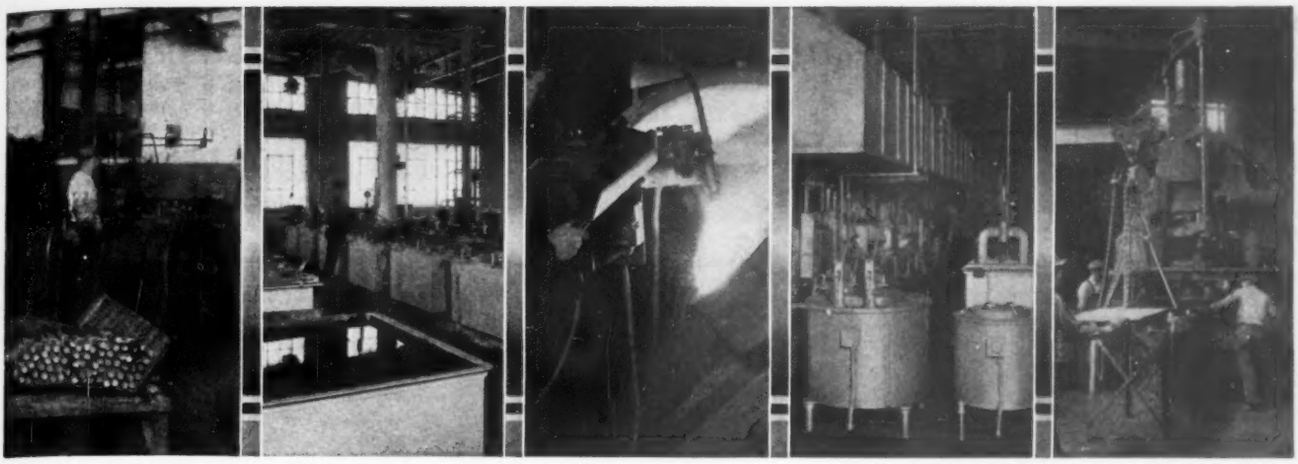
Concrete Steel Institute Will Convene in Chicago

The Concrete Reinforcing Steel institute announces a sectional meeting of its members to be held in the Town club, Hotel Knickerbocker, Chicago, April 20. The morning will be devoted to a review of institute activities during the past year by the president, this to be followed by discussion of matters deemed of mutual interest.

Regional conferences will be conducted in the afternoon for various groups in the Middle West tonnage area.

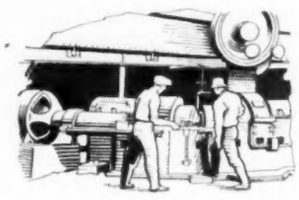


Sketch showing location of expansion plates on highway bridges. Resistance to wear and corrosion makes chrome-nickel steel ideally suited for these plates



MAKING THE MOST OF STEEL

AIRWAY beacon towers, radio beacons and other steel structures subject to severe weather corroding influences require unusual care and details as to galvanizing. Painting of such galvanized surfaces also calls for careful preparation, some fabricating shops treating the material as follows: In one gallon of soft water dissolve 2 ounces each of copper chloride, copper nitrate and sal ammoniac, then add 2 ounces of commercial muriatic acid. This should be done in an earthen or glass vessel, never in tin or other metal receptacle. Apply the solution with a wide flat brush to the galvanized iron or steel, when it will assume a dark, almost black color, which on drying becomes a grayish film, preventing the paint from peeling on the galvanized metal. The treatment should be allowed to stand at least 12 hours and the surface then dusted off before applying the red lead priming coat.



IN SPINNING chrome-nickel steel sheets of the 18-8 analysis, the blank frequently develops a tendency to wrinkle or break along the edges. This is avoided by one fabricator by forming the entire blank with the exception of 1 inch in from the periphery and finishing this portion last.

$ $ $

Among recent developments in nitriding equipment is elimination of the usual molten metal seal used for closing the retorts. In place of the molten metal or of the equally undesirable bolted and gasketed joint, a special dry powdered sealing material is utilized to prevent infiltration of air or loss of the ammonia gases. With this sealing material it is possible to hold a pressure within the retorts of more than 4 inches of water without appreciable leakage.

$ $ $

Of the costs involved in turning out automatic screw machine products, tooling cost is the largest. This cost varies depending upon the nature of the part and the material. If the cost is spread over a short period, the unit cost may be exorbitant, while if it is spread over three to six months, these parts can be produced at a more reasonable figure.

$ $ $

A western steelworks employs electric rivet heaters for heating rivets in its structural shop, one man heating for three riveting gangs. Previously one heater had been required for each gang.

$ $ $

A new pump for handling acids in process work has all its parts coming in contact with the acid made of chrome steel. It is of the single suction type and to insure uniform expansion from the center of the pump when handling acids of high temperature, the casing is supported on the horizontal center line by brackets and it is also keyed on the vertical center line underneath the water-cooled stuffing box.

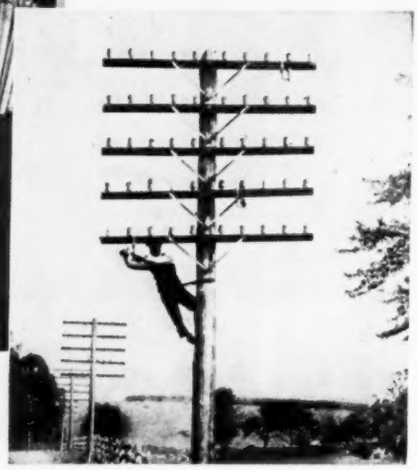
$ $ $

For most metallurgical operations requiring a controlled atmosphere, experience has shown a hydrogen-nitrogen mixture to be more desirable than hydrogen alone. For this purpose one manufacturer has developed for dissociating ammonia a portable equipment having a capacity for producing automatically up to 400 cubic feet of gas per hour. In the bright annealing of both ferrous and nonferrous materials, dissociated ammonia eliminates scale and the necessity for sand blasting, buffing or pickling. The gas is also applicable to atomic arc welding, shielded arc welding, gas welding and lead burning.

$ $ $

Uneven wear and pitting on carbon blocks or brushes of rotating electrical equipment can be eliminated, according to an electrical manufacturer, by cutting spiral grooves in the whirling collector rings or commutator, although this actually reduces the area of the contact surface 50 per cent.

ECONOMY is effected in amount of rod, welding gases and time required for joining by a newly devised process of welding which can be applied to overland pipe construction. Welding is performed with a flame having an excess of acetylene and a newly developed welding rod. The backhand technique is followed in which the flame is pointed backward against the weld and the rod and flame manipulated parallel to the line of welding. The operator alternately plays the flame upon the base metal to prepare it for fusion and on the rod for accelerated deposition of weld metal. In joining sections of pipe the welding is done at the top while the pipe is being rotated away from the operator.



Photos, Western Electric Co.

FIFTY-FIVE years ago this spring the first telephone line, 3 miles long, was strung in the United States. Today there are more than 79,000,000 miles of wire in the Bell Telephone system alone. Western Electric Co. maintains 32 warehouses for distributing steel pole line hardware, and many carloads of steel are shipped direct from mills to points where new construction is under way

Large Uses of Steel In Small Ways

215th Article ◆ Pole Line Hardware

IN THE maintenance and expansion of the country's vast network of telephone and telegraph communications a substantial quantity of steel is consumed annually, of which approximately 7000 tons goes into pole steps, each weighing less than 1 pound. These steps are made of mild steel, annealed after forming, but before galvanizing, and are 10 inches long, ⅝-inch in diameter.

An average of 15 steps is required for each pole, and about 40 poles are required for each mile of pole line construction. During the past five years, the Bell Telephone system, by far the country's largest communication utility, added an average of 7200 miles of pole line per year, and with this new construction, combined with the needs of maintenance, installed about 750,000 poles annually, although not all are equipped with steps. The Bell system now has 16,000,000 poles.

Pole steps represent about one-third of the steel consumed annually for pole line hardware, certain items of which have been referred to in previous articles in this series. The quota of steel required for each pole varies according to the type of line it carries and the conditions surrounding it. The smallest item of steel on a pole is the 6-penny nail that holds the wooden pin on the crossarm. The largest and heaviest is the I-beam used in supporting loading coil cases on long distance lines. Some I-beams weigh a quarter of a ton. There are instances where a pole carries as much as one-half ton of steel. In all, pole line hardware includes more than 200 different steel products.

16,000 Tons Per Year

An index of the total amount of this pole line hardware consumed annually is the purchases for the Bell Telephone system through its purchasing agent, the Western Electric Co. From 1927 to 1931 they amounted to about 16,000 tons of steel per year.

The Bell system also consumes about 8000 tons of iron wire annually, for guying poles and as telephone wire to furnish circuits for rural subscribers where the cost of installing copper circuits would be excessive. Furthermore, 8100 tons of wire strand is consumed annually to support telephone cables and for heavy guying of pole lines.

The tremendous growth in telephone communication and its accompanying requirements of steel may be appreciated when it is considered that the original telephone line was strung just 55 years ago this spring. This line ran from the electrical shop of Charles Williams in Boston to his home in Somerville, Mass., about 3 miles.

Today there are more than 79,000,000 miles of wire in the Bell Telephone system, of which more than 27,000,000 miles are strung overhead, either in cable, or as "open wire." The distance covered by pole lines in the Bell system is about 421,000 miles.

All large purchasers of pole line hardware maintain distributing warehouses. The Western Electric Co., for instance, has 32 of these warehouses distributed at key points throughout the country.

Large communication companies use steel in many other parts of their plants. But nowhere is there a more striking instance of how small pieces may run into large quantities than in the steel used in poles. Literally, the millions of poles now in existence hold thousands of tons of steel aloft.

Dry Seal Gas Holder Is Claimed World's Largest

Claimed to be the largest dry seal gas holder in the world and constructed almost entirely of steel plates and structural shapes, the unit illustrated on page 18 was erected by the Stacey Bros. Gas Construction Co., Cincinnati, a division of the International-Stacey Corp., Columbus, O., for the Syracuse Lighting Co., Syracuse, N. Y. The holder, of German design, is known as a Stacey-Klonne type, the construction company holding the American license to erect the units. Capacity is 6,000,000 cubic feet.

The structure is 251 feet high and 188 feet in diameter. Approximately 1100 tons of 3/16-inch steel plates and about 1000 tons of structural shapes entered into the construction. The floating piston alone embodies 500 tons of steel. Riveted assembly is used.

Within the holder is the structural steel piston, to the perimeter of which is attached a flexible seal ring that confines the gas to the space below. When the piston is at rest on the landing blocks, its entire weight is supported at the perimeter, thus eliminating the necessity for providing a foundation for the interior area of the holder other than to support the bottom plating and the gas pressure.

As shown in the illustration, the exterior of the holder is provided with a stair and an electric elevator. Access to the piston is provided by means of an electrically operated lift suspended from the dome in the center of the roof, and in addition by a double chain folding ladder.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Butane

Use of butane gas for heat treating, in American Machinist, March 17, 1932, p. 369, 1 pp., no illusts.

Several plants have effected economies amounting to several hundred dollars a month by the substitution of butane for city gas in heat treating furnaces. Butane is a light, volatile petroleum by-product of natural gas wells and is reported to sell at a wholesale price of 3½ to 4¼ cents a gallon, f.o.b. wells. Contracts for its delivery in tank cars over a long period of time can be made, thus justifying the small investment in equipment required to store and utilize it.

Butane can be stored in liquid form and can be used in the same burners that are employed for city gas, although this necessitates special mixing equipment which is not needed if burners are converted to meet requirements of the butane. The fuel is stored in a tank of approved form outside the buildings in which it is to be used. It may be drawn off in liquid form and run through a vaporizer or it can be taken from the top of the tank in the form of a gas, passed through a reducing valve and then used direct.

Experiments in using the gas for carburizing are in progress and are said to promise economies as compared to solid carburizing agents, but as yet this phase of the use of butane is still in the experimental stage, the article points out. (See STEEL, May 7, 1931, p. 42).

—STEEL, 4-18-32

Preheating Rolls

Preheating sheet mill rolls, by Arthur J. Whitcomb, in Blast Furnace and Steel Plant, April, 1932, p. 344, 3 pp., 6 illusts.

Methods of heating rolls electrically may be classified broadly as embodying either the resistance or inductance design. In the resistance class there are both convection-type and conduction-type heaters; in the inductance field are solenoid-type and transformer-type heaters. Description of all four types is presented and methods of installation and operation discussed. In the resistance-type heater heat is applied directly to the roll surface of a heating element in contact with the same which is only a few degrees hotter than the roll surface, while in the induction heater the heat is developed in a thin shell in the exterior portion of the roll face which is continguous to the heater coil. To preheat rolls so as to obtain the proper roll contour, it is necessary that the center of the roll face be considerably hotter than the edges—in most cases there is a difference of over 200 degrees Fahr.

—STEEL, 4-18-32

Steel Castings

Progress in production makes for dependability, by F. Walter Blackeby, in Machinery, April, 1932, p. 601, 2½ pp., 5 illusts.

Recent improvements made in the methods of producing steel castings have greatly increased their strength and reliability. Twenty-five years ago steel castings were considered a necessary evil. They were used only when other materials could not be adapted to the purpose for which they were employed. Such difficulties as surface sand, scale, sand inclusions, blowholes and shrinkage cavities caused much delay in completing a job of steel casting.

The marked improvement in quality that has been effected is largely a result of research work such as is being done by the Steel Castings Development bureau, Electric Steel Founders' Research group and other organizations, as well as by independent foundries. A study of sand conditions has largely eliminated the difficulty in machining caused by surface sand and sand inclusions, and avoided pinholes in and near the surface of the castings. Co-operation between designing engineer and foundry engineer has been productive of many improvements.

—STEEL, 4-18-32

Pressed Steel

Cutting costs with pressed steel, by Chester B. Gleason, in Machine Design, April, 1932, p. 36, 3 pp., 6 illusts.

The field for pressed steel is indicated clearly in any part, article or machine produced in quantities, particularly when portable or mobile. Stampings combine strength with lightness and are alike and uniform in accuracy. Unless the part is of a particularly intricate design, minute and individual inspection is not necessary. The combination of all these factors means lower costs.

Selection of sheet or strip steel for pressing depends entirely upon the product to be made, sheet steel being wider and usually thinner than strip. Both will draw in dies, both may originate in the same open-hearth furnace heat and therefore be of identical chemical content. The cost of one may be greater per pound than the other, but economies can be effected with the higher priced metal in multiple punching or blanking, or some similar factor.

—STEEL, 4-18-32

Steel Furniture

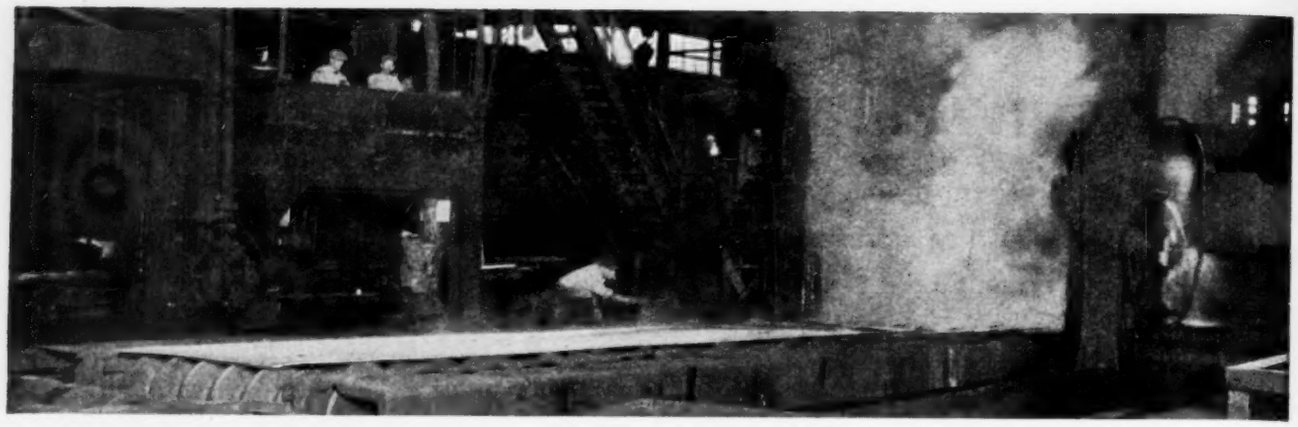
Fine finish on metal furniture, by W. V. Morrow, in Metal Progress, April, 1932, p. 27, 7 pp., 7 illusts.

Improvements made in recent years in the art of rolling sheet steel and drawing it into useful machine parts have assisted the furniture manufacturer in shaping his product for many purposes, and these improvements express in the desk, refrigerator, kitchen cabinet and hundreds of other articles the dominant spirit of power, grace and strength which steel conveys to the human mind. Recent inquiry developed the fact that if all wooden desks alone were made of steel it would require no less than 1,100,000 tons annually. Potential outlets of this type for steel sheets are enormous.

Arc welding plays an important part in the assembly of steel furniture. Lap joints in sheets are done by spot welding. Tubes forming legs and braces are butt welded together by resistance methods. Butting seams in sheets and corner joints are made with the electric arc. For thin sheets, where the heat of the arc tends to burn through, the oxyacetylene flame is necessary. All these joints must be ground carefully to remove excess weld metal or flash down to the general level of the surface.

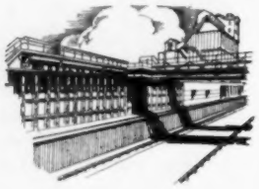
Finishes must combine beauty with durability; they must not crack, peel, nor chip, and under ordinary usage should never need retouching.

—STEEL, 4-18-32



PROGRESS IN STEELMAKING

INSTALLATION of a forced-feed grease lubricating unit on a roughing and slabbing mill has eliminated 24 man hours per day, which is equivalent to approximately $12 in labor costs at this particular plant. Insertion of shims, to compensate for the wear of the bearings, now is done approximately every four months. Under former practice it was necessary to shim the bearings every three weeks.



BY-PRODUCT coke oven doors built with a flexible seat to afford self-sealing now are being installed in this country. In addition to curtailing smoke these newly developed doors require no clay for luting the joints nor luting equipment, thus effecting a reduction in labor costs involved in producing by-product fuel.

♦ ♦ ♦

Grinding and washing approximately 100,000 pounds of ashes a month at a plant in New York state, is affording the reclamation of 20,000 to 25,000 pounds of magnetic scrap and nonmagnetic metals, and the savings of about $16,000 annually.

♦ ♦ ♦

At a steelworks where a nozzle-controlled auxiliary ladle is used to pour two 3-ton ingots simultaneously, chipping costs have been reduced and an increase of 25 per cent in the life of the molds effected.

♦ ♦ ♦

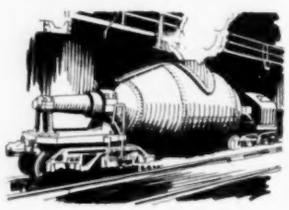
Results obtained through the use of a recently developed high-speed steel for turning rolls have proved that such a steel not only can bring roll turning costs back where they were before the introduction of alloyed iron rolls but also reduce the costs of former years. A production engineer of a large roll manufacturing concern states that tools made from the new steel keep their edge throughout the machining of five to six rolls of average size. After five months service, the tools made of the special steel have not been reforged and a life of six months per forging can be expected. With former tools, reforging was done once a month.

♦ ♦ ♦

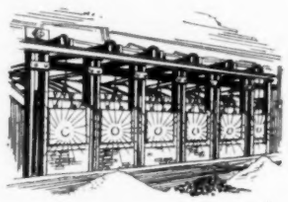
Comparative tests on two stands of a 3-high 22-inch mill equipped with plain and roller bearings and rolling 3.50 per cent nickel steel, 8 x 9-inch blooms down to about 2¾-inch squares showed a power saving of 48.5 per cent in favor of the roller type bearings when the rolls of both mills operated at a speed of 82½ revolutions per minute.

♦ ♦ ♦

Recent developments in the art of galvanizing is the so-called galvannealing process which involves heating the coating at a temperature above its melting point for a short period after the sheets leave the galvanizing pot. By this arrangement the fluid zinc is converted to a gray-colored iron-zinc alloy, a strong bond between the alloy layer and zinc is obtained and the tendency of the zinc to peel is removed.



MIXER-TYPE hot metal cars of welded rolled steel construction have been built to conform to clearance limitations at blast furnaces now using open top ladles of 25 to 35 tons capacity. The ladle resembles a modern stationary mixer and is lined with standard brick shapes keyed in place to assure self-support in any position in the vessel. The car body is independent of the ladle. A 125-ton unit of this type in service at a Southern plant is handling 900 tons of hot metal daily from two stacks to the pig machine.



A TEST conducted over a 12-month period on an open-hearth furnace equipped with an automatic reversing control for maintaining a heat balance at opposite ends of the furnace, discloses a fuel savings of 12 per cent and a reduction in labor amounting to $1200.

♦ ♦ ♦

Switching of hot metal with its attendant scrap loss has been eliminated by a pig iron producer in the Pittsburgh district by locating the pig machine in the furnace cast house.

♦ ♦ ♦

One of the largest cranes ever built for handling sheets made on a continuous mill is in service at a plant in the Chicago district. Plates in maximum lengths of 170 feet are carried by 35 hooks spaced on 5-foot centers. These hooks are suspended from a built-up structural beam which is raised or lowered by the main hoists blocks. All hooks are geared together and are capable of turning through an arc of 180 degrees to facilitate removal when the plates have been desposited on supports.

New Books Worth Reading

SCIENCE ◆ ECONOMICS ◆ BUSINESS

For The Chemist Who Would Be Protected

The Law of Patents for Chemists, by Joseph Rossman, Ph.D., patent examiner of chemical inventions, U. S. patent office, editor, Journal of the Patent Office society; cloth; 304 pages, 5 1/2 x 8 1/2 inches; published by Inventors Publishing Co., Washington; supplied by STEEL, Cleveland, for $3.50, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

This book gives in non-technical language a comprehensive discussion of chemical patents for chemists, metallurgists, electrochemists, chemical engineers, manufacturers and executives. It includes a great deal of information on the essential principles of patent law and procedure of much value to those concerned with the commercial aspects of the chemical industry.

◆

Three Generations of Roebling Family

The Roeblings, by Hamilton Schuyler; cloth, 425 pages, 6 x 9¼ inches; published by Princeton University Press; supplied by STEEL, Cleveland, for $5, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London.

In the century since 1831, when John A. Roebling immigrated to this country and began his career as an engineer, bridge builder and industrialist, he and his sons and grandsons have successively been responsible for achievements of a public nature, culminating in the greatest suspension bridge in the world, the George Washington bridge across the Hudson from Manhattan island to Fort Lee, N. J.

On Manhattan alone four great bridges have been constructed by the Roeblings, the Brooklyn bridge being first of the series.

In view of this record of achievement by three generations of one family this volume has been prepared to provide such of the public as is interested an intimate account of the lives and personalities of the men who accomplished such wonders. The material things, the bridge building and the wire manufacturing, have not been made the important feature of the work, but rather the personalities of the men who by progressive achievements have made the name world famous. To reveal what manner of men these Roeblings were and to discern the personal traits and attending conditions which enabled them to achieve success on one field of activity for nearly a century of sustained effort has been the chief aim of the author.

◆

How Our Steel Industry Looks to Englishman

The Iron and Steel Industry of the United States, by E. D. McCallum, M.A.; cloth, 333 pages, 5 1/2 x 8 1/2 inches; published by P. S. King & Son Ltd., London; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

Not often is it possible to obtain a view of ourselves through the eyes of an outlander equipped to see truly and report accurately. During 1927-28 Prof. McCallum was in the United States as occupant of a Rockefeller fellowship in social sciences, when he gathered the material for his book, writing it in the vacation which covered the next two years. His intention is to follow it by a similar study of the iron and steel industry of Great Britain and the Continent.

To American readers the value of the book will lie not so much in the subject matter, the facts, as most of them are well known in the United States and have been covered in publications by native writers. But the approach of this author and his conclusions are of the greatest interest, furnishing a viewpoint devoid of the patriotic pride almost inseparable from a similar narrative by an American and especially by one involved in the steel industry.

Such errors of fact as appear in its pages are not many and detract little from the value of the work, except as setting up a few mis-statements which thus become a record to cause possible confusion to future historians. An instance of this is the recital of post-war mergers which is made to include that of the Youngstown-Inland companies and the Bethlehem-Youngstown companies, neither of which was completed. At the time of writing the book they seemed certain to be made effective though subsequent events upset the applecart and prevented.

Numerous tables and charts are interspersed in the text to illustrate the statements and in the appendices additional data are given. An adequate index rounds out the volume.

◆

Manufacture and Use of Refractory Materials

Refractories, by F. H. Norton, assistant professor of ceramics, Massachusetts Institute of Technology; cloth, 594 pages, 6 x 9 inches, published by McGraw-Hill Book Co. Inc., and supplied by STEEL, Cleveland, for $6.00, or in Europe by the Penton Publishing Co. Ltd., 416 Caxton House, London.

The scope of the work is not so inclusive as the title might indicate. The book deals mainly with the fundamental processes involved in the manufacture and use of refractories. Also the descriptions of manufacturing processes have been confined to American practice. Extent to which the field has been covered is indicated by the headings of the 21 chapters into which the work is divided: Literature on refractories; history of refractory development in the United States; refractory clays, minerals and rocks; mining and preliminary treatment of refractory materials; plastic characteristics and molding of refractory materials; drying; measurement of high temperature; burning of clays and other refractory materials; kilns for burning refractories; melting points of refractory materials; load bearing capacity of refractories; spalling; reaction between refractories and slags or glass; expansion and shrinkage; heat transmission of refractories and insulators; the microscope and its use in the study of refractories; use of X-rays in the study of refractories; methods of chemical analysis; miscellaneous properties of refractories; refractory shapes and special articles; refractory cements and plastics.

A list of references to publications dealing with the same subject is appended to each chapter. In addition a complete list is included of periodicals and other publications that carry articles on refractories. A list of natural minerals with formula, melting point, occurrence, specific gravity and hardness, occupies 20 pages. A bibliography on clays, clays and minerals high in alumina, silica minerals, magnesite and lime, chrome, rare earths, silicon carbide, graphite, and general, covers 8 pages and contains 169 references.

Russian Iron Ore Reserves Rival United States'

(*Continued from Page 20*)

as to the ultimate productiveness of Krivoi Rog.

Let it be recalled that the Gogebic and Marquette ranges in the Lake Superior district are known to be productive at depths much below 3000 feet. There seems no reason to think that an iron range of the same type, carrying ore bodies of the same kind in much the same structural and lithological relationships, and apparently of the same geologic age, will be any the less productive because it happens to be in Russia.

The Krivoi Rog ores are on the average richer than old range Lake Superior ores. As a rule they run above 55 per cent natural iron, and contain a heavy portion of bessemer grade. There is plenty of lump for the open hearth, and a considerable portion of fine ores which require sintering.

When the natural high-grade ore available is less than the demand for it, resort may be had to milling the low-grade ore, of which the quantity is vast indeed. This material consists largely of bands of hematite alternating with bands of chert running from 25 per cent to 35 per cent or more in iron.

Jig tests on this material crushed to 12 millimeters show that 80 per cent of the iron is recovered in a concentrate running from 50 per cent to 55 per cent.

If our Lake Superior types of rich iron formation were so easily concentrated there would be less reason for worry about adequate supplies of high-grade ore for the next generation.

Suspect Further Deposits

It is possible that there are other ranges of the Krivoi Rog type in South Russia. Magnetic observations and a little drilling show that Krivoi Rog itself extends many miles northward beneath a cover of younger rocks.

Exploration for ore and determination of mining conditions in this direction have not gone far. It is of interest to note that iron ore and iron formation of the Krivoi Rog type have been found by recent drilling far northward near Kursk, 100 miles north of Kharkov.

The writer had the opportunity of making a geological examination of a portion of the Krivoi Rog range under the tutelage of Geologist E. R. Fuchs, whose studies here have been continuous over a period of 30 years. The character, structure and sequence of the iron-bearing and other formations bear a striking resemblance to the generalized Huronian of the Lake Superior region.

The sedimentary series, which includes the iron-bearing members, lies on granite and granite gneiss. Overlying the granite and gneiss, and derived from it, is a thick conglomerate-arkose formation (100 meters), which is overlain in order by clay slate (50-60 meters), talcose schist (2-20 meters), chlorite and amphibolite schist alternating with beds of quartzite (100 meters), iron formation (60-400 meters), and carboniferous schist on which lies a thick formation of clay schist.

Three Beds of Iron Ore

Unconformably above this lower series is another known as the Saxagon series. At its base is about 500 meters of arkose, carrying pebbles and boulders of ore, which is overlain by about 120 meters of gray slate and carbonaceous slate, and this, in turn, by a thick formation of thin bedded iron formation separated into three beds by two formations of gray slate.

These upper beds of iron formation seem thus far to carry most of the ore. The sedimentary series have been intruded by basic dikes, apparently subsequent to the deformation by folding and faulting. However, there are not many of them and according to Mr. Fuchs, they have no obvious relation to the ore bodies.

The Krivoi Rog range strikes about N-S and is flanked by granite and granite gneiss on both sides. The sedimentary beds are highly deformed by folding, and are much metamorphosed in the more highly deformed areas.

The general structure is apparently synclinal, much complicated by cross buckling, drag folding, shearing and faulting. Mr. Fuchs says that the ore bodies occur mainly in synclinal folds and thinks that their origin is identical with that of the Lake Superior type. It appears so to me. Any student of Lake Superior geology would find himself on familiar ground in the Krivoi Rog range.

Prior to the revolution, the operation of the Krivoi Rog mines was in the hands of French and Belgians, but the equipment for mining and the mining methods were antique, from a Lake Superior point of view. Under Soviet management, there is an effort to modernize the equipment and the methods of mining. The plans are well along toward completion, but little else has been accomplished.

The original intention to use American equipment is being shifted because of present inability to make purchases in the United States. In the meantime, production goes forward at the rate of about 1 to 1¼ tons per man per day, whereas such mines properly equipped and managed should produce easily 5 to 6 tons per man per day of underground ore.

Krivoi Rog ore has long been exported to European furnaces but only recently has it appeared in the seaboard market of the United States. Well equipped and managed, Krivoi Rog could produce from known ore bodies 25,000,000 to 30,000,000 tons of high-grade ore per year, without extending the known productive limits of the range and, without resort to concentration of low grades.

Present production is about 8,000,000 tons per year, of which more than 6,000,000 tons is consumed in South Russian furnaces; the remainder is exported.

This range is the most important single factor in the prospect for expansion of iron and steel manufacture, not only for the reasons already stated but also because the purity of its ore will make possible the use of a larger quantity of very cheap low-grade ore from the Peninsula of Kertch, by mixing at the furnaces.

Kertch

THE quantity of iron ore at Kertch is so vast that estimates are of significance, considering the amount of it that may be used. Its use is limited by its low grade and certain impurities. I am informed that it was in use in the plant at Kertch by the Belgians before the war and rails are being made of it now by mixing with Krivoi Rog ore. Some has been exported.

The plant at Kertch was reopened in 1928 after nine years' idleness and is being enlarged and revamped by the Soviets. Through Mariupol, on the north coast of the Sea of Azof, comes Krivoi Rog ore and Don Basin coal, and back goes Kertch ore. But the movement is unbalanced and must remain so until the Don Basin furnaces take more of the Kertch ore. As with our own furnaces, "skimmed milk" is not wanted so long as the "cream" holds out.

The ore at Kertch is a mixture of brown to yellowish hydrated iron oxides, high in silica, phosphorus and alumina, with considerable manganese and troublesome arsenic. The ore needs sintering to improve its structure (although some of it is charged raw with sinter and Krivoi

Rog ore) and to take out the arsenic, which I am informed it does to considerable extent but not entirely. In its raw state the ore contains iron 35-45 per cent; silica 10-20 per cent; manganese 0.0-6 per cent; phosphorus 1-1½ per cent; alumina 4-5 per cent; and loses 14-15 per cent on ignition.

Within a stone's throw of the plant at the tip end of the Kertch peninsula is an open pit from which most of the Kertch ore has been mined. South of Kertch, on and near the coast, are several other pits from which a little ore has been taken.

I had the good fortune to meet at his work south of Kertch a member of the geological committee of this district who was good enough to discuss with me the geological structure of the region, the progress of exploration of the ore bodies and to exhibit his geological maps and sections of Kertch peninsula. The section on Kertch peninsula was said to be:

Quaternary: Brown clay and sand, 0-80 meters. Gray, blue, green and brown sands and clays, 20-30 meters.
Middle Pliocene: Iron ore—The greatest known thickness of this bed is 26 meters, but usually it is 10 to 15 meters.
Lower Pliocene: Sands, clay and shells, 50 meters.
Upper Miocene: Porous shell limestone of pure $CaCO_3$; shell rock with some $MgCO_3$, but mainly $CaCO_3$ 80 meters. Limestone used as flux in blast furnaces, 15 meters.

Above the upper Miocene these beds are exposed in cliffs facing the sea a few miles south of Kertch. The Miocene section of Kertch peninsula has been compressed with the formation of folds striking about E-W. The dip of the synclinal limbs of the ore beds varies from 12 to 45 degrees. The ore beds are preserved in synclines, where erosion has not cut too deeply.

The open pit at Kertch plant is in a syncline which appears to extend westward at least 90 kilometers, with a width of 2 or 3 kilometers and is said to carry the ore bed all of the way.

A little arithmetic will disclose the vastness of the ore tonnage in such a structure. The estimates of the committee account for the huge total of 4,200,000,000 tons of this ore on Kertch peninsula, of which exploration indicates 400,000,000 to 500,000,000 tons can be mined from open pits.

The Kertch ores are original and the ore beds seem to be just as persistent and widespread as are the other formations in the Miocene section on Kertch peninsula where they have escaped destruction by erosion.

Central Russia

ABOUT 150 miles south of Moscow in the vicinity of Tula and Lipetsk are low-grade limonitic iron ores occurring near surface in association with sand, clay and chert, which appears to be the residue of weathered limestones of Carboniferous and Devonian ages.

Most of the mining is done underground but in the future much more of the ore will be taken from open pits. The thickness of the ore bed is not much, from less than 1 meter up to 6 meters; the overburden from 0 to 35 meters. About one-half of the ore that will be mined will be concentrated by washing, the other will be smelted without treatment.

Iron Made Three Centuries Ago

The first iron making at Tula is said to have begun in 1632 at Lipetsk in the time of Peter the Great. The present furnaces near Tula were built by Belgians in the 90's. They were closed in 1919 and reopened in 1926. Production in 1929 was 135,000 tons of pig iron. The furnaces near Lipetsk were built about 25 years ago and were under Belgian management until they were taken over by the government after the war. Their capacity is about the same as those of Tula.

The reserves in the Tula-Lipetsk district are relatively small and are not adapted to cheap large scale mining. About 50,000,000 tons is known but not improbably 100,000,000 tons more will be the reward of continued exploration. Present plans call for enlarged furnace capacity and a steel plant of generous proportions, but these are held in abeyance pending further exploration of the ore deposits and determination of the volume of ore it may be practicable to produce currently for the support of these plants.

The Ural Region

THE iron industry in the Ural region is an old one. Small furnaces are located at Nadegninsk, N. Tagil, the vicinity of Bakal and other points. The government plans large developments in all of these districts where iron has been produced for many years, and especially at Magnitogorsk, on the Ural river, 200 miles south of Sverdlovsk, where plants are in construction which rival the magnitude of those of Gary, Ind.

The government's present plans call for maximum development of every known deposit of iron ore in the Ural region, furnaces for reducing the ore, and plants for fabricating the metal. This proposed extraordinary development of the metallurgical industries in the Urals is supposed to be an important factor in the general plans for military defense of the country.

There is little metallurgical coal in the Ural region so far as now known; and so far as may be seen, the furnaces in this region will remain dependent on the coal in the Don Basin in the Black Sea region, and in the Kusnetz basin, far out in Siberia, 1200 miles eastward.

The Black Sea region is in every way better adapted to large scale development, but because it lies in the southwest corner of European Russia and has no topographical barriers to military invasion it is open to attack by land and sea. The occupation of this region by a hostile army would be well-nigh fatal to the country's defense, in event it were dependent wholly on the metallurgical industries there centralized.

The furnaces and mills of the Urals are on the ultimate line of military defense. With this in mind, the location of the great plants on the iron ore at Magnitogorsk with proposed ample rail connections with the coal of the Kusnetz basin is not so fantastic as it would appear to be if regarded from an economic viewpoint alone.

With the exception of the Bakal district, so far as I know, the iron ores of the Urals are almost entirely magnetite (and its derivative martite), genetically related to intrusives. Most study has been given to the ores at Magnitogorsk because the reserves are far greater and richer as well than in any other locality in the Ural region. That is one, if not the main, reason why Magnitogorsk is the scene of plant development of startling magnitude.

Magnitnaya

THIS is the name of an elevation four miles west of the Ural river, on the east side of the central range of the South Ural mountains about 200 miles south of Sverdlovsk. Although it is called a mountain, it is really no more than a hill rising only 268 meters above the River Ural, with slopes of only 10 to 15 degrees.

This hill is composed of granitic rocks, limestone intruded by the granitic rocks, its metamorphic derivatives, and iron ore deposits. Other deposits occur on a similar but lower hill called Kouivass about eight kilometers north-east of Magnitnaya.

Between the hill Magnitnaya and the Ural river are rising the great blast furnaces, coke ovens, open-hearth and bessemer furnaces, rolling mills, etc., of the Magnitogorsk plant and a city to house its workmen.

Magnitogorsk is connected with the Trans-Siberian railroad at Omsk. At a point near Troitsk, about 145 kilometers eastward, a branch line runs northward to the main line of the Trans-Siberian railroad at Sverdlovsk.

The ore deposits of Magnitnaya are said to have been discovered in 1748, and that mining has been carried on in a small way from time to

time for 150 years. The production never exceeded 50,000 tons in any year. Ore was mined only in the summer, and in the winter was hauled on sleds to the furnaces at Belloretsky, 80 kilometers northwest.

The ore on Magnitnaya is related to limestone and intrusive granodiorite in such a way, according to Russian geologists, as to leave no doubt of its origin. It is a contact-metamorphic deposition of magnetite replacing the limestone. The ore is not by any means in compact masses but replaces the limestone irregularly. It is cut here and there by dikes and irregular masses of porphyry, some of them of great magnitude.

Exploration by drilling has been done to a depth of about 100 meters, other exploration by cuts and tunnels. It appears that from the surface downward the ore changes considerably in structure and composition as a result of weathering and leaching. Near the surface the ore is in blocks, chunks and smaller pieces of martite and hematite associated with clay. It is available for furnace use by simple washing.

Sulphur Leached Out

This zone of weathering is thin, not above 15 meters thick anywhere and much less as a rule. Below it is the zone of leaching, of irregular thickness up to 65 meters. The leached ore is chemically like that in the weathered zone, that is to say, the magnetite has gone over to martite and hematite and the sulphur (pyrite) has been well leached out.

But the ore is physically compact and most of it must be crushed and concentrated. Below the zone of leaching is the unoxidized or primary zone, in which the ore carries much sulphur (pyrite), averaging about 2¼ per cent. Sintering is relied on to reduce the sulphur in the concentrates.

Following are composite analyses of drill samples of the ore on Magnitnaya, from Russian sources:

	Per Cent			
	(1)	(2)	(3)	(4)
SiO_2	5.70	6.52	4.48	7.42
Al_2O_3	0.68	1.84	1.05	3.71
Fe	63.75	58.15	65.20	58.53
MnO	0.09	0.08	0.04	0.11
CaO	1.71	4.6	0.53	3.89
MgO	0.55	0.75	0.10	0.73
S	0.19	2.25	0.19	2.31
P	0.027	0.02	0.01	0.01
FeO	7.70	19.19	10.34	20.20

Note: (1) West slope of Magnitnaya, low sulphur ore.
(2) West slope of Magnitnaya, high sulphur ore.
(3) East slope of Magnitnaya, low sulphur ore.
(4) East slope of Magnitnaya, high sulphur ore.

The analyses of the low-sulphur ore are typical of the zones of weathering and leaching; of the high sulphur ore, the primary zone beneath the zone of leaching. As suggested by the analyses, the silica in these ores is largely in combination with ferrous iron.

There are two bodies on Magnitnaya, the larger on the western slope, the other on the opposite side. The larger one covers 1.7 square kilometers, about 2300 meters long, by 1000 meters wide. It has been partially explored to a depth of about 100 meters by drilling, disclosing about 200,000,000 tons of ore in terms of concentrates for the furnace. In the same terms the smaller ore body contains about 65,000,000 tons. Nearby outlying deposits of the same kind account for 100,000,000 more tons. Mining will be done, of course, in open pit; it is already under way.

Step Up Production

The scale of proposed operations at Magnitnaya has been changed from time to time upward. What the present one is I do not know, but two years ago the plans provided for production of 5,000,000 tons of 62 per cent concentrates from 10,000,000 tons of crude ore for local consumption.

Additional production will be needed for the furnaces at Kusnetz, the amount of it depending on what luck is had in finding and developing ores local to Kusnetz. Shipments to Kusnetz have already been made.

As the situation now stands, Kusnetz has the coal, Magnitnaya the ore, the one 1200 miles removed from the other. A furnace is in blast at Magnitogorsk, one is about ready to go in at Kusnetz and soon there will be a steady movement eastward of ore to Kusnetz and westward of coal to Magnitnaya.

The volume of this movement, however, will not be much until rail connections are improved and at least doubled. Ore consumption at Kusnetz is planned on a scale to provide a balance between the eastward and the westward traffic.

With a Gary at one end of the line and a half-Gary at the other, one can imagine what the traffic in raw materials over this line would be. Add to that finished products and other incidental traffic and it is easy to see that a double track line will be a busy one, to say the least.

Bakal

NORTHWARD about 100 miles is the Bakal district. Here in a much folded and faulted section of slate, limestone and quartzite cut by dikes and sills of diabase are a number of iron ore deposits, mainly hematite and limonite derived from siderite which appears to have replaced limestone.

Fred Uhler states that the ore bodies occur characteristically on the crests and upper slopes of anticlinal limestone structures, in association with dikes and sills of diabase, which are faulted parallel to the axes of the folds and transversely as well. The reserves of the various deposits which follow include all material above 40 per cent Fe:

Ore Reserves of the Bakal District
(000 omitted)

	Proved	Probable	Metric Tons
Vagonia Yama	4,400	2,100	6,500
Bakalchic	10,200	5,400	15,600
Starry Bakal	100	900	1,000
Boulandika	3,000	4,300	7,300
G.P.U.	9,700	48,800	58,500
Erkushin Mt.	300	26,700	27,000
	27,700	88,200	115,900

Most of this ore, though of rather low grade, can be and probably should be used without concentration. Sintering can be done to advantage to improve its structure and dispose of the moisture and the water of combination which is high. The general nature of the ore is disclosed in the following generalized analysis:

	Per Cent
Fe	45.0 -50.0
P	0.012- 0.07
SiO_2	7.0 -15.0
MnO	0.80 - 2.0
Al_2O_3	3.5 - 4.5
CaO	1.0 - 1.8
S	Below 0.02
H_2O	8.0
Loss on ignition	8.0 -10.0

North Ural District

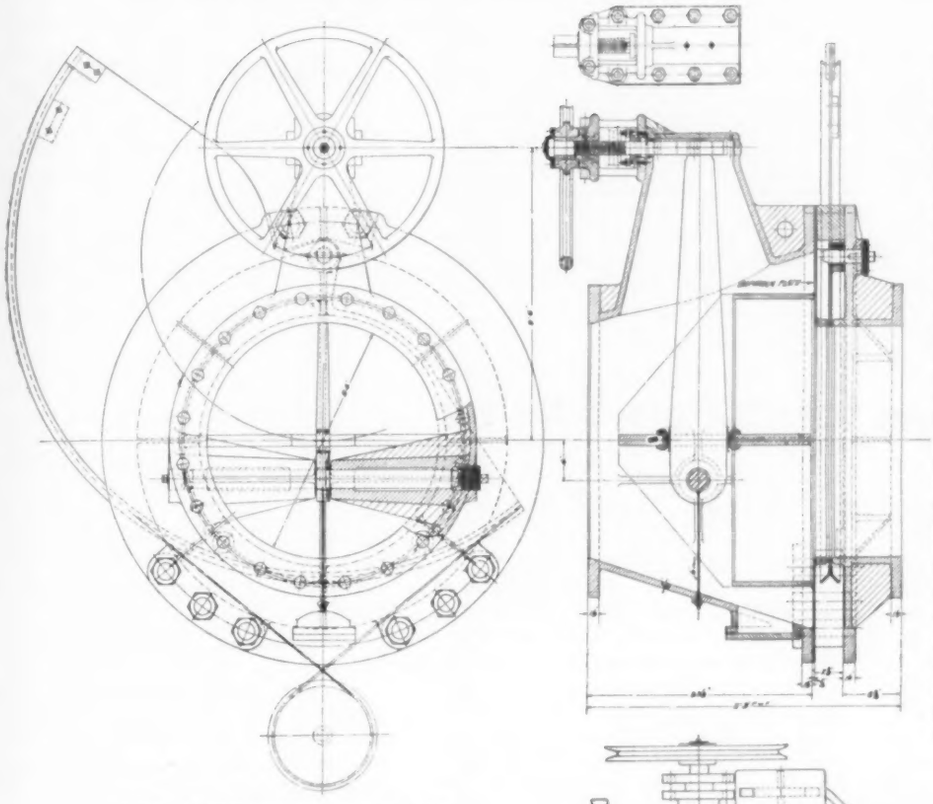
UP THE Ural range 100 miles beyond Sverdlovsk is the Tagil district. Although mining has been carried on here for many generations the district has been comparatively little explored. All of the present reserves are in, and in the vicinity of, the old Tagil and Blagadotte mines. These ores are magnetite and martite of the same type and general origin as those at Magnitnaya. Nearly all require concentration.

It is expected that exploration will reveal much additional ore in the Tagil district. The same may be said of the Nagedinsk district about 75 miles north of N. Tagil. The ores here are of the same general Blagadotte-Visokia type but contain about 1 per cent nickel and 0.5 per cent chromium. The reserves in the Tagil and Nagedinsk districts are reasonably estimated on the basis of 60 per cent concentrates to be about 115,000,000 metric tons.

Summary

ACCORDING to present information from the most reliable sources, the iron ore reserves of European Russia commercially available under existing economic condi-

Reduce your Cost of Installation and Operation by Using these New Valves !



THE AMERICAN GAS VALVE

(Patents Pending)

A new goggle type valve for gas mains 12" to 30" in diameter as shown above. A diaphragm plate built into the valve makes easy separation of the two contact edges of the valve seat possible, thus allowing the goggle plate to be swung into the open or closed position. The fulcrum of the diaphragm lever is pivoted on the valve body and the lever is moved by a screw operated in a grease lubricated dust proof enclosure. The design of the valve does not reduce the area of the main; the operating mechanism provides ample pressure on the contact edges of the goggle plate to guarantee a gas-tight valve. This valve was designed particularly for open hearth, boiler plant, heating furnace, soaking pit and similar gas mains, giving a strong hand-operated goggle valve that cannot get out of order.

The valve body is manufactured of steel castings; the diaphragm lever is a steel forging; hardened steel wearing surfaces are provided where necessary; the expansion element is of welded steel plate; the goggle plate is of the pivoted swinging type; the screw operating mechanism provides a sufficiently powerful reduction to assure operation of the valve by one man; the movement of the diaphragm plate procures a 3/16" opening at the seat, thus allowing the plate to swing freely.

Valve will operate as easily when installed in a vertical main as in a horizontal main. The screw operating mechanism may be located on the horizontal or vertical center line of the main.

AMERICAN MIXER AND CHECK RELIEF VALVE

For Blast Furnaces.

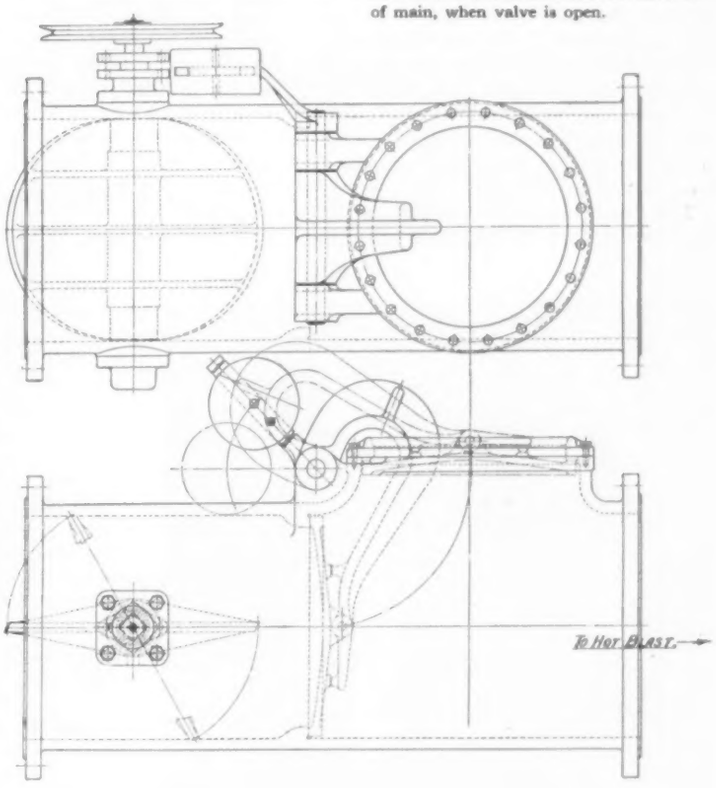
(Patents Pending)

In order to maintain the required hot blast temperature at the blast furnace tuyeres, it is necessary to admit more or less cold air into the hot blast main during the time each stove is on the line; a by-pass main, therefore, connects the cold and hot blast mains for admitting the cold air necessary. In this by-pass main a mixer or equalizing valve and a relief valve have generally been installed.

The valve offered comprises a combination of a Mixer or Equalizing Valve of the butterfly type and a Relief Valve of the Check Valve type, which performs the double service of closing the by-pass main and opening the hot blast main to the atmosphere if, for any reason, the blast pressure is taken off. This loss of pressure causes the relief valve disc to drop from its normal working position, thereby closing the by-pass main and opening the hot blast main to the atmosphere so that any 'shot of gas' will escape instead of traveling back to the blowing engines.

The valve is manufactured of iron and steel castings or of steel plate construction, as desired, in sizes from 15" to 24" in diameter.

No Wind Restriction—A straight direct flow of wind, with no reduction in area of main, when valve is open.



WILLIAM M. BAILEY COMPANY

ENGINEERS

MAGEE BUILDING, PITTSBURGH, PA.

tions of that country and present mining and metallurgical practice are not less than:

	Metric Tons
Krivoi Rog, above 55 per cent natural iron	1,025,000,000
Kertch Peninsula, 35-45 per cent	500,000,000
Tula-Lipetsk, 40-45 per cent	150,000,000
Magnitnaya, about 60 per cent	360,000,000
Bakal, above 40 per cent	115,900,000
Tagil and N. Ural, about 60 per cent	115,000,000
Total	2,265,900,000

So far as concerns the ore supplies it may be said that the plans of the Russian government to utilize them at the rate of something like 40,000,000 tons per year are well grounded. The ore is available at that rate of production.

It is entirely feasible to mine from Krivoi Rog at the rate of 30,000,000 tons per year, and there are no natural economic barriers to development of a great metallurgical industry based on these ores. Magnitnaya is one of the great mines of the world, although not happily located except from a military strategic point of view.

There are, of course, many problems to be surmounted before Russia has an iron and steel industry of first magnitude. But there is no question whatever that the iron ores of Krivoi Rog and Kertch, coke of the Don Basin, Manganese of Nikopol, water power of the Dnieper river, and the oil of the Caucasus, combine to render South Russia potentially one of the world's most favored industrial regions.

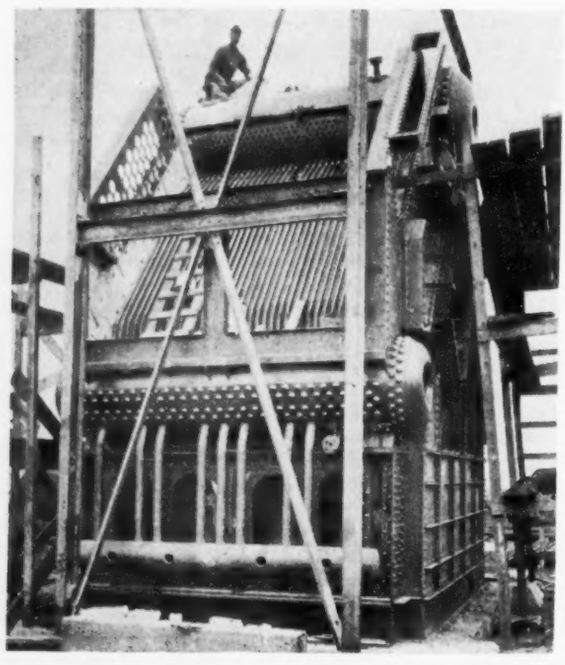
New Marine Steam Generators Built for Long Service Require Much Steel

SOME unusual design features are being incorporated in eight marine steam generators which the Foster Wheeler Corp., New York, is building for two new passenger steamers, SANTA PAULA and SANTA ELENA, for the Panama Mail Steamship Co. The construction is being made unusually substantial, as the ships have been laid out for great reliability and it is proposed to keep the boilers under steam for longer periods between cleaning and repairs than has been the practice in the past.

The boilers are of three-drum, A-type design, built for 450 pounds steam pressure and to produce 36,000 pounds of steam per hour. Each unit is fitted with five oil burners, water walls, superheaters and economizers. The accompanying illustration gives a good idea of the construction of the boiler and its support. The heavy steel casing will be sufficiently rigid to eliminate any racking movement in the boiler setting, regardless of ship position or vibration.

Drums will be made of marine steel 1 9/16 and 1 3/32 inch thick, using rivets of the same steel. Total weight of metal per boiler will be 168,000 pounds, including 5000 pounds of steel castings and 29,000 pounds of iron castings.

The two steamers now are under construction in the yard of the Federal Shipbuilding Co., Kearny, N. J.



ONE of eight marine steam generators being built for two new passenger steamers, the SANTA PAULA *and* SANTA ELENA. ***Construction is unusually substantial, for the boilers will be under steam for longer periods between cleaning and repairs than is general practice***

Tool Builders Postpone Exhibit

A DECISION to postpone its scheduled Cleveland machine tool exposition from September, 1932, to September, 1933, was an important action taken by the National Machine Tool Builders' association at its annual spring meeting in Columbus, O., April 11-12. This action was approved by a large majority of the members.

Aside from present business conditions, which were regarded as requiring increased emphasis on direct selling, members considered 1933 more favorable for other reasons. They were influenced particularly by the fact that the Century of Progress exposition in Chicago next year will bring many visitors from abroad who would arrange also to see a large display of machine tools.

Invite European Buying

American tool builders often have exhibited in European industrial shows, and these exhibits, while profitable in results, have been costly and necessarily limited in scope. Therefore, the opportunity to show the entire range of tools to European visitors on American soil is regarded as of unusual value. The 1933 show will be depended upon to demonstrate that American machine tools still have a margin of producing capacity sufficient to absorb high European tariffs or invite their overthrow.

In addition, the new Cleveland auditorium, designed with special regard to requirements of the largest exposition under power, will be completed by next year. This exhibit hall will be large enough to house all exhibits under a single roof.

The Columbus meeting was well attended and most of the time was devoted to internal questions of policy. A resolution addressed to the senate appropriations committee was adopted in favor of adequate support of the bureau of foreign and domestic commerce. Formal reports included the presidential address of Robert M. Gaylord, president, Ingersoll Milling Machine Co., Rockford, Ill.; the treasurer's report of George E. Randles, president, Foote-Burt Co., Cleveland; and the first statement of the new general manager, Boyd Fisher.

American Manganese Bronze Co., 225 Broadway, New York, has increased its capitalization from $250,000 to $400,000.

New Equipment

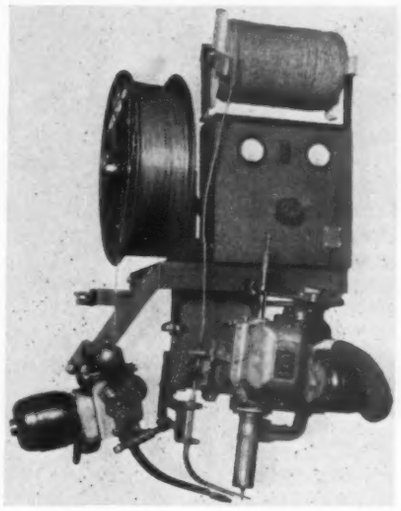
PRODUCTION FABRICATION TREATMENT FINISHING

Welding Head Feeds Filler Metal into Shielded Arc

Lincoln Electric Co., Cleveland, has announced the development of a wire feeding head which allows automatic arc welding with the shielded arc process. The result claimed is high speed operation on either butt, fillet or building-up welding, the deposited metal having physical characteristics equal to or better than mild steel.

Shielded arc technique is obtained through use of an automatic welding head in conjunction with a fibrous autogenizer which is fed into the arc flame. This autogenizer burns and forms a gas excluding the oxygen and nitrogen of the atmosphere while the metal is molten. The welding head utilizes a carbon arc around which is superimposed a magnetic field which directs the arc stream on the line of fusion.

Full automatic control of the arc is obtained, thus maintaining the heat of the arc constant. Means also are provided for varying speed of travel of the head through a wide range. Continuous filler metal is obtained from a reel mounted on the head and fed into the arc just in front of the arc travel. The rate at which the filler metal is fed into the arc also can be varied so that the amount of metal deposited



Lincoln shielded arc wire-feeding automatic arc welder

can be varied to meet the conditions demanded by the speed of the head and the type of weld being made. Only one size of filler is necessary for any type of work within the range of the machine.

◆

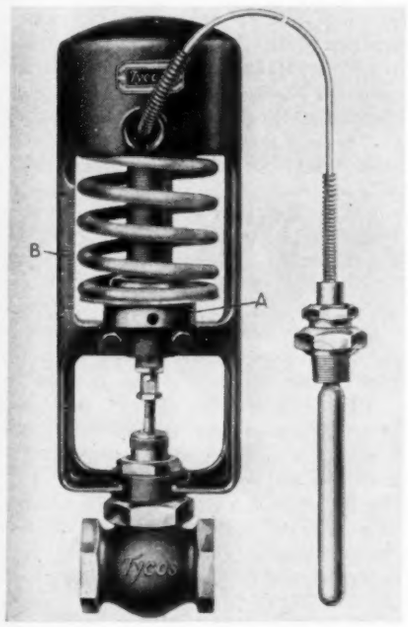
Temperature Regulator Is Self-Acting Type

Taylor Instrument Co., Rochester, N. Y., recently developed a self-acting temperature regulator characterized by accuracy and sensitivity, thereby opening new field for its use. The most important improvement in the device is the practical elimination of friction.

A feature which contributes a great deal to the performance of the new regulator and its adaptability to the greatest variety of applications is the construction of the tube system. This consists of a double seamless bellows, extra heavy walled copper connection tubing and stainless steel bulb of exceptionally small size and thin wall.

This tube system requires a minimum volume of actuating medium, which makes a small bulb possible and, together with the thin wall of the bulb and its shape, results in a tube system that responds quickly to temperature changes. Of considerable value also is the overheating features of the tube system which permits heating the bulb beyond the upper limit of the range of the instrument without injury.

Among the practical applications suggested for this self-acting temperature regulator, shown in the left outside column, are bottle and can washers, plating and sealing tanks, hot water service tanks, small barrel-type milk pasteurizers, glue kettles, water storage boxes, hot water circulating systems for vat pasteurizers, drying rooms and open baths.



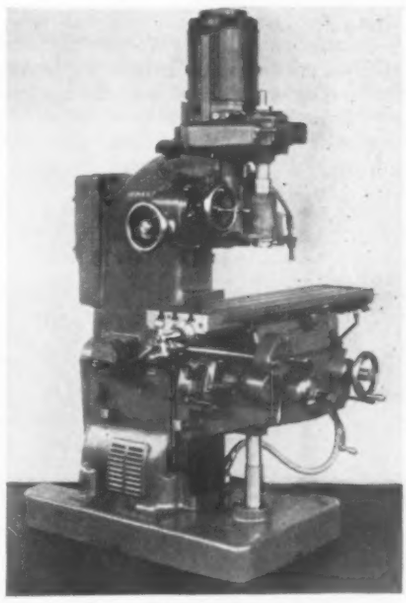
Self-acting temperature regulator designed by Taylor Instrument Co.

◆

Adds New Milling Machine To Standard Line

Brown & Sharpe Mfg. Co., Providence, R. I., recently announced the addition of a motor-driven standard vertical spindle milling machine designated No. 1 to its line of equipment. The new machine provides a fast, sensitive unit for end mills and shell end mills, through spindle speeds ranging from 150 to 1800 revolutions per minute in either direction. The high speed series gives correct speeds when using small end mills from ⅛-inch to 3-inch diameter, of the new cutting alloys as well as high speed steel. The back gear range to 450 revolutions per minute gives a smooth powerful drive when using large cutters.

The unit is provided with a new



Standard Brown & Sharpe motor-driven milling machine

Sheet steel enclosed type machine tender built by Stackbin Corp.

type of motorization, an individual motor being used to drive the spindle with a second motor furnishing power for table and spindle feeds. Both motors are controlled from a single push button station readily accessible from front and rear operating positions. All electrical controls and wiring are completely enclosed.

All cutting movements of both table and spindle can be controlled from either front or rear operating position. Feed changes of table and spindle and speed changes can be made similarly. Practically all of the features in the regular standard line are included in the new machine. A fast, flexible type of speed change is available for the speed motor, through a drum type control and back gear lever, which are conveniently located at the left front of the spindle head. These control levers are reached from either front or rear operating position.

Power feed is provided for the spindle head, which can be readily disengaged when not in use. In addition, an unusually fast hand adjustment of 2-1/10 inches per revolution of the handwheel is available, so that less than two turns of the handwheel will move the head the entire length of its travel. As the head is counterweighted, this adjustment is made easily. The longitudinal hand control is provided with a newly designed safety handwheel, automatically disengaged when not in use.

◆

Machine Tender Is Made Of Sheet Steel

Stackbin Corp., Providence, R. I., has developed an enclosed type sheet steel machine tender, shown in the illustration at the left.

The tender is equipped with a shelf, bench top and two doors provided with a padlock hasp, and can be supplied with or without casters. In size it is 18 inches deep, 30 wide and 32 inches high. The finish is soft velvet green.

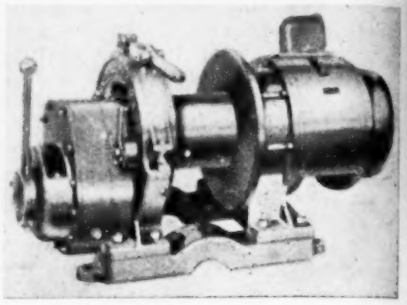
◆

Portable Hoist Operated By Electric Motor

Ingersoll-Rand Co., 11 Broadway, New York, has added to its line of portable hoists a nonreversible, single-drum electric hoist designed for many applications in the mining, contracting, and industrial fields.

The new hoist is suitable for all single cable work within its capacity such as hoisting timbers, muck, tools, and pipe, hauling and spotting cars, and for single-line scraping. It is made in two sizes; No. 107 is of 7½ horsepower and rated at 2000 pounds pull at 125 feet per minute. It has drum capacity for 400 feet of ½-inch or 700 feet of ⅜-inch cable. No. 107L is of like power, but has drum capacity for 800 feet of ½-inch or 1400 feet of ⅜-inch cable. No. 110 has a 10-horsepower motor and is rated at 2000 pounds pull at 165 feet per minute. The drum capacity is the same as for the No. 107. No. 110L has the same power as the No. 110 and the same drum capacity as the No. 107L.

These new hoists are simple, rugged, and compact, are easily operated, have smooth control, and graduation of speed. They have a self-energizing brake for stopping and holding the load and an automatic safety drum lock for added safety when handling suspended loads. Moving parts are protected by dustproof construction.



Ingersoll-Rand portable nonreversible single-drum electric hoist

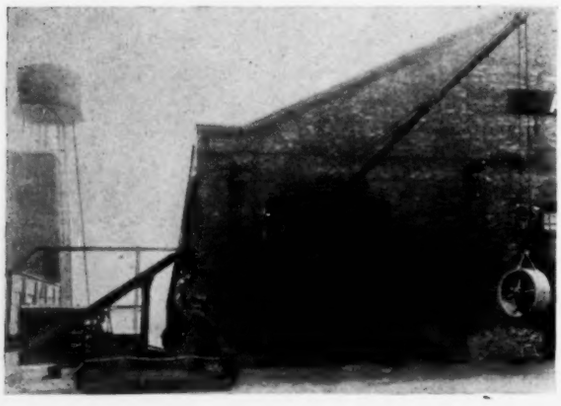
◆

Unit May Be Converted into Shovel or Crane

Austin Machinery Co., manufacturing organization of Austin Western Road Machinery Co., Chicago, recently developed a ⅜-yard convertible tractor shovel and crane, shown in the accompanying illustration. This unit is equipped with a welded bucket of 11 cubic feet capacity. One feature of the boom which is formed from two 12-inch channels, is in the curved upper end to give greater clearance for the dipper handle. As a result the maximum dumping height is 17 feet and 10 inches with a boom angle of 55 degrees.

Since flexibility in operation is particularly important in a small shovel, considerable attention has been given to this point. The crawlers are 10½ feet in length and measure 7-2/3 feet from outside to outside in width, thus providing a substantial base.

Five major conversions are possible to adapt the shovel for other types of work. A clam shell attachment; a 48-inch back filler for scraping earth into excavations; a ditcher attachment, ordinarily called the trench hoe or back hoe; the drag line and the crane, make up the convertible features. When employed as a crane the shovel will handle loads of approximately 3000 pounds at a radius of 15 feet.



SPEEDS as high as four miles an hour are possible with this Austin tractor shovel and crane, although the crawlers are not depended upon for transport over any great distance. A mounting of rubber tired wheels is provided

WHAT STEEL?

TO answer this question would reveal abundant facts concerning the chemical analysis of that steel, its machinability, carburizing properties and physical characteristics such as tensile strength, hardness, impact value, bending and crushing qualities, etc.

To know who manufactured that steel is to possess a gauge for your confidence in all its qualities and their uniformity in repeated shipments.

In steel applications, a knowledge of these factors is absolutely essential to determine ultimate performance, stamina in service and cost of production.

No manufacturer can hope to accomplish his greatest success with cold finished steels unless he understands the individual requirements for each part and adopts the steel best suited for all the demands of quality and economy.

UNION DRAWN STEEL CO.

BEAVER FALLS, PA.

Assured Quality

UNION SPECIAL CARBURIZING STEEL

Guarantees 100% Satisfactory Carburized Parts

UNION Special Carburizing Steel has been developed through Union Drawn research to answer the demand for a guaranteed quality in a straight carbon low sulphur grade of carburizing steel.

The secret of its unusual merits is not only in the perfected analysis but in the method by which certain elements are introduced into its manufacture. Proper control of materials and processes from the ore mines through to the finished cold drawn bar assures uniformity in composition and freedom from mechanical defects.

Compared with ordinary low carbon open hearth S.A.E. 1015 or 1020 which it replaces, Union Special Carburizing Steel assures the following features:

It develops a uniformly hard case with a tough ductile core.

Tensile properties are higher in value.

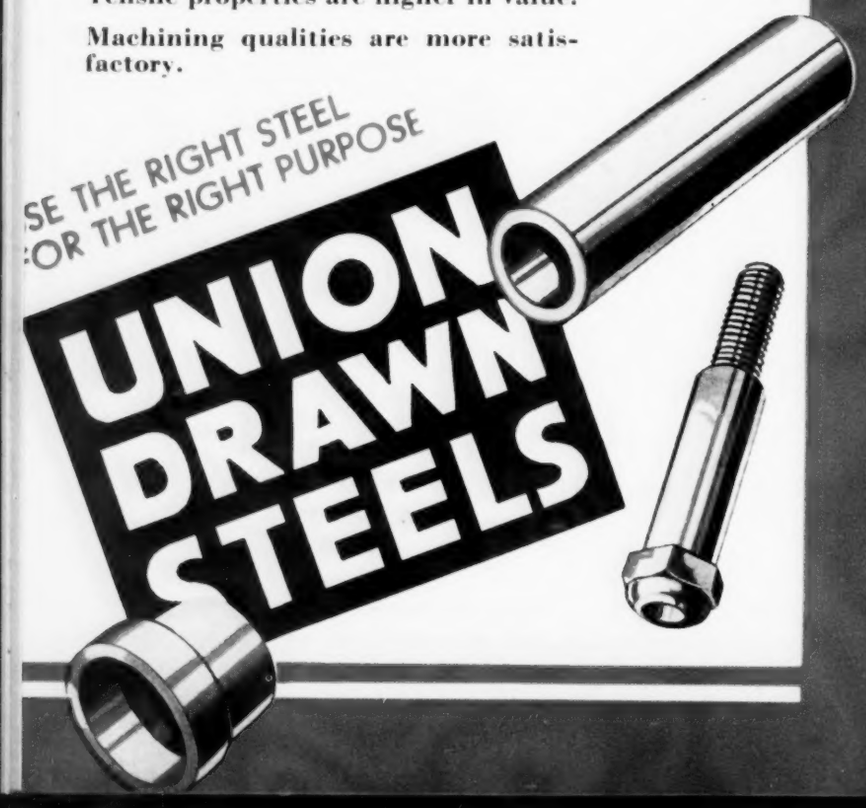
Machining qualities are more satisfactory.

This special steel is recommended for use in producing king pins, carburized gears, steering worms, bushings, etc. Piston pins form an excellent example for its application as such parts must be characterized by toughness of core and uniformity of hardness without the slightest surface blemish.

An interesting booklet has been prepared describing Union Special Carburizing Steel. It presents some very valuable data covering physical properties. A copy will be forwarded upon request.

UNION DRAWN STEEL COMPANY

BEAVER FALLS, PA.



Moderate Gain Due in Steel Rate

Operations Expected To Move Up Point or Two This Week—Ford Schedules Indicate Substantial Releases Soon—Tin Plate More Active

SLIGHT gains in steel production at Buffalo and Pittsburgh compensated for declines at Cleveland and in eastern Pennsylvania last week, holding the steelmaking rate at about 22 per cent, but substantial improvement at Birmingham reinforced by a modest increase at Youngstown and a comeback at Cleveland should lift the rate a point or two this week.

Due to resumption of two blast furnaces and the Ensley mills of the Tennessee Coal, Iron & Railroad Co., the Birmingham rate this week will jump from 21 per cent to almost 50. A long-idle charcoal stack in Tennessee has been lighted. A thin sprinkling of Ford business in the Cleveland, Youngstown and Pittsburgh districts is patching up weak spots there.

Unquestionably, the Ford situation is paramount to steel. Adoption of a schedule for May, probably for 75,000 units, is now definitely set for April 20, and the substantial steel releases expected last week should materialize. Last week Ford eight assemblies reached 650 daily; a 1000-daily rate is not distant. Ford, reported unable to win a $2 per ton concession on some flat-rolled lines, is understood seeking $1. Meanwhile, Chevrolet and Plymouth, the other volume producers, are steady.

A number of favorable developments protrude from the market news—not sufficient to affect sentiment but an earnest that constructive forces are at work. Producers, however, continue to adjust their position to the realities and reduce costs. While a second wage reduction is not improbable, the equivalent of a 10 per cent cut is being sought in the elimination of welfare and allied activities and curtailed staffs.

Two inquiries are current at Cleveland for 1000 tons of pig iron, and shipments to automotive foundries are increasing. Sheet releases at Youngstown are broader. Both Pittsburgh and Chicago report improved demand for soft steel and cold-finished bars. Chicago mills have booked 6000 tons of rails and 3000 tons of track fastenings. Tin plate output is seasonally subnormal, but the outlook for a fair pack of vegetables this year is improved. The Texas Co. is momentarily expected to place 75,000 boxes for re-export, and the Nippon Oil Co. is inquiring for 22,000 boxes.

Structural material affords an excellent illustration of the difficulties of producers in closing inquiries. Pending work in building is extensive, but last week's awards at 7770 tons were considerably below the seasonal average. Foremost in fresh inquiry is 15,000 tons for the postoffice extension at Washington. Four federal projects for May require 85,000 tons.

Though the Great Lakes are open for navigation, only a few bulk carriers are moving, handling only coal, no iron ore having been loaded. Mining companies are holding their usual spring conferences, these having to do mainly with how to spread employment this season without inflating stocks. Some operators have reached the point where they are unable to provide as well for employes as they did last year. Unless northern railroads recede from their insistence on levying the full 6-cent freight surcharge, a double charge is in prospect, lower lake carriers also demanding 6 cents.

Finished steel prices are holding measurably well, if chronic weakness in flat-rolled material at Detroit be excepted. Pig iron prices continue steady, though imports in the East are disturbing. Including 6500 tons received recently, an eastern pipemaker has imported 26,000 tons of Dutch iron. Scrap prices have developed softness, especially at Chicago, Cleveland, Boston.

The scrap composite of STEEL, as a result, has declined 8 cents to $7.79, while the iron and steel composite remains stationary at $29.74, and the finished steel composite at $47.62.

Composite Market Averages

	April 16	April 9	One Month Ago March, 1932	Three Month Ago Jan., 1932	One Year Ago April, 1931	Ten Years Ago April, 1922
Iron and Steel Composite	$29.74	$29.74	$29.61	$29.98	$31.59	$34.42
Finished Steel Composite	47.62	47.62	47.09	47.28	49.22	51.04
Steelworks Scrap Composite	7.79	7.87	7.94	8.03	10.12	13.65

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	April 16, 1932	March, 1932	Jan., 1932	April, 1931
PIG IRON				
Bessemer, del., Pittsburgh	$16.76	16.76	17.26	18.26
Basic, valley	15.00	15.00	15.00	17.00
Basic, eastern del., eastern Pa.	15.00	15.75	16.00	17.25
No. 2 foundry, del. Pittsburgh	16.26	16.51	17.26	18.26
No. 2 foundry, Chicago	16.00	16.50	16.50	17.50
*Southern No. 2, Birmingham	11.00	11.00	12.00	13.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.76	15.76	15.76	18.26
Malleable, valley	15.50	15.50	16.00	17.00
Malleable, Chicago	16.00	16.50	16.50	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	22.29	27.04
Gray forge, del. Pittsburgh	16.13	16.13	16.63	17.63
Ferromanganese, del. Pittsburgh	80.24	80.24	79.85½	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville, furnace, ovens	2.25	2.25	2.25	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	30.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	27.50	30.00
Billets, open-hearth, Pittsburgh	27.00	27.00	27.50	30.00
Wire rods, Pittsburgh	37.00	37.00	37.00	36.00

	April 16, 1932	March, 1932	Jan., 1932	April, 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.55	1.55	1.65
Steel bars, Chicago	1.70	1.70	1.70	1.80
Steel bars, Philadelphia	1.91	1.83	1.81	1.96
Iron bars, Chicago	1.70	1.70	1.60	1.80
Shapes, Pittsburgh	1.60	1.55	1.55	1.65
Shapes, Philadelphia	1.75	1.65	1.65	1.78
Shapes, Chicago	1.70	1.70	1.70	1.80
Tank plates, Pittsburgh	1.60	1.55	1.55	1.65
Tank plates, Philadelphia	1.79½	1.69½	1.69½	1.88½
Tank plates, Chicago	1.70	1.70	1.70	1.80
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.75	1.85
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.20	2.20	2.25
Sheets, No. 24, galvan., Pitts.	2.85	2.80	2.80	2.85
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	2.00	2.05
†Sheets, No. 24, hot, ann., Chi.	2.35	2.35	2.45	2.45
Sheets, No. 24 galvan., Chi.	3.00	3.00	2.95	3.00
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.25	12.50
Heavy melting steel, eastern Pa.	7.25	7.35	7.50	10.00
Heavy melting steel, Chicago	6.50	6.75	7.25	9.60
No. 1 wrought, eastern Pa.	8.00	9.00	9.35	11.00
No. 1 wrought, Chicago	6.25	6.25	7.25	8.80
Rails for rolling, Chicago	9.50	9.50	10.30	11.85

Sheets

Valley Mill Specifications Gain—Ford Expected to Place Larger Sheet Orders Within a Week

SHEET PRICES, PAGE 51

Youngstown, O.—Steady inflow of a fair volume of specifications for the common grades of sheets permits district mills to maintain a moderate rate of operations. The shutdown of the Sharon Steel Hoop Co.'s Haselton mills is said to be for the purpose of making extensive alterations. Doubling of workhours for 2500 men at the Fisher Body plant, Cleveland, in the past two weeks, due to renewed demand for Chevrolet bodies, finds confirmation among district sheetmakers. The latter now hold requisitions for delivery in April of tonnage formerly specified for May, while new specifications are promised for May delivery. Briggs Body Co. at Detroit also is taking a fair volume of sheets, but the Murray plant still is awaiting releases on Ford bodies. Mills are receiving small releases of material for Ford parts and do not expect much heavier Ford tonnages for several weeks.

Philadelphia—Galvanized sheets are moving relatively better than other grades, but the general volume is small. Prices are unchanged.

Buffalo—Sheet mills have not experienced the usual seasonal stimulus. Operations continue less than 25 per cent. Sales are slow and inquiry almost negligible.

Pittsburgh—Sheet orders and operations are steady. Heavier releases and new orders from the Ford Motor Co. are expected to develop within the next week. Orders placed recently have been in the small volume prevailing during the past 30 days. Specifications from other consumers also have been maintained at former levels with only small lots in individual purchases. Prices generally are well maintained at recent levels of 2.20c, Pittsburgh, for hot-rolled annealed sheets; 2.85c for galvanized and 1.55c for hot-rolled material. Mill operations are unchanged at 25 per cent.

Cleveland—Continued absence of large sheet purchasers leaves second quarter prices indefinite as to strength. No sizable inquiry is pending, all stock for the local Fisher Body Co. being placed through Detroit. In the latter district several concessions have been made on autobody sheets recently. The barrel trade here still lacks improvement, as do other lines, such as metal furniture and stamping. Prices appear fairly firm at 2.20c, Pittsburgh, for black, on new business; and 2.85c, Pittsburgh, for galvanized. Cold-rolled grades are unchanged.

Cincinnati—Demand for automotive sheets has improved slightly. Buying in general receded somewhat during the past week as a reaction from heavier ordering in March in anticipation of second quarter price schedules.

Chicago—Sheet business continues moderately good. Roofing products sales this month have been under expectations, but small container manufacturers are doing well. Occasional second quarter contracts are being signed at 2.95c, mills, for No. 34 galvanized, and 2.30c, mills, for No. 24 hot-rolled annealed. Mill operations at 30 per cent are down slightly from a week ago.

St. Louis—Producers and distributors of steel sheets expect improvement in business during the next few months, basing their views on broader automotive requirements and necessary purchases by various other interests. Demand for galvanized sheets is showing moderate seasonal gain. Prices are steady.

E. J. Hoffman has formed the Hoffman Mfg. & Development Co. Inc., at Tulsa, Okla., to manufacture a line of new devices.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
San Francisco c.i.f.	2.30c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
New York, del.	2.55c
Philadelphia, del.	2.51c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
San Francisco, c.i.f.	2.80c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
Philadelphia, del.	3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
San Francisco, c.i.f.	3.45c

AUTOMOBILE NO. 20

Pittsburgh, base	2.80c to 2.90c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
Gary, Ind. Harbor, base	2.25c to 2.35c
Chicago, del.	2.30c to 2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
Gary, Ind. Harbor, base	2.75c to 2.85c
Chicago, del.	2.80c to 2.90c
Philadelphia, del.	3.06c
New York, del.	3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE
Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
Long ternes, 24, unassort	3.00c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)
F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95
(Per pound)	
Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00
(To Manufacturing Trade)	
Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	1.80c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.75c
New York, del.	1.87c
Boston, del.	2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.00c
Do., wide flange	2.10c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.90c
Boston, del.	2.02c
*Pittsburgh, cold finish	1.75c
*Pittsburgh, forg. qual.	1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c to 1.35c

IRON

Chicago, base	1.60c to 1.70c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
*Chi., billet	1.65c to 1.75c
Chi., rail steel	1.55c to 1.65c
Chi., rail steel, road, bridge and culvert	1.55c
*Philadelphia, cut lengths	2.06c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland	1.90c to 2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills
Alloy Quality Bars, 2.65c, mill
(Differentials to various classes of consumers)

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10 Cr.	0.45
2100	0.55	51.00 Cr. spring	0.20
2300	1.50	6100 bars	1.20
2500	2.25	6100 Spring	0.95
3100	0.55	Cr., Ni., Van.	1.50
3200	1.35	Carbon Van.	0.95
3300	3.80	9250 (flats)	0.25
3400	3.20	9250 (rds.,sq.)	0.50
4100 .15 to .25 Mo.	0.50		

Strip, Hoops, Bands

Hot strip to 6 in., Pitts.	1.50c to 1.60c
Do, 6 1/16 to 24-in., Pitts.	1.40c to 1.50c
Hot strip to 6 in. Chi.	1.60c to 1.70c
Do, 6 1/16 to 24-in.	1.50c to 1.60c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 80-25-10 off in pkgs.; 80 25-10-2½ off in bulk.
Rolled thread machine bolts, ⅝ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset, 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

*Cut nails, c.l. Pittsburgh	$2.50
* Do. less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleve.	70, 10 and 5 off

Bars

Little Change in Volume, and Prices Hold Steady—General Consumers Take Fair Tonnages

BAR PRICES, PAGE 51

Chicago—Although bar mill operations again have gone above 25 per cent, automotive business is disappointing. Concerns making parts for Ford production are specifying only moderate needs, as under their contracts much of the steel material is being shipped to them from outside points. Quotations are based on 1.70c, Chicago, and in view of the small sales volume, this base is held with little difficulty. Deformed bar shipments are being held back by delays of general contractors in letting state road contracts. Dealer sales of implements are up this month, but equipment makers feel they have sufficient stocks, and are planning no early summer production schedules.

Boston—Bids close April 26 on 160 tons of bar steel for the Boston navy yard.

New York—Bar sellers are now asking a $3 a ton premium on what is termed commercial forging bars, and are continuing the $5 a ton premium on guaranteed forging bars. Until recently, all bars for forging interests not definitely guaranteed have been going at the regular price, notwithstanding extra precautions of the mills to provide suitable material.

Washington—Bid prices were uniformly steady on 110,000 pounds of medium round bar rivet steel, ⅝ and ¾-inch, for Norfolk, April 12. Republic Steel Corp., Youngstown Sheet & Tube Co. and Atlantic Steel Co. all bid $2227, delivered; five others bid $2337. Bids close May 3 on 50 tons of soft steel bars, for Panama, including 14 tons of rounds, up to 3½-inch, most of the remainder being flats.

Pittsburgh — Inquiries for steel bars disclose a steady market with 1.60c, Pittsburgh, generally maintained. Specifications showed a small improvement during the past week, slightly better releases appearing from some automotive interests. Requirements of other consumers are unchanged.

Youngstown, O.—Steel bar needs appear modest, judging from the small orders placed by a wide variety of consumers. Concrete bars are dull since building construction and road building buyers still are reluctant to extend themselves. Moderate lots of alloy bars move to auto partsmakers at about the same rate as in past weeks. Common steel bars bring 1.60c, Pittsburgh.

Cleveland—Specifications for carbon steel bars have not deviated the past week from continued dull trading. Forging bars are apparently in a little better demand as May automobile business lends some hope of improvement. Forgers will pay $3 a ton extra beginning third quarter. This decision was recently reached so that forging bars will be specified and not their substitute in plain hot-rolled. Soft steel bars are 1.65c, Cleveland base, to the general trade.

Cold Finished Gains Some Buying Volume

Cold Finished Prices, Page 51

Pittsburgh—Cold-finished steel bar releases have been slightly more active recently despite a lack of marked improvement in automotive requirements. Orders from some miscellaneous consumers are moderately heavier. Total business compares favorably with the March volume and additional betterment is looked for during the remainder of the month. The market generally continued 2.00c, Pittsburgh.

Cleveland—Cold-finished steel bar orders show little improvement, although reports from Detroit indicate that late April and May will see improved auto parts specifying. Miscellaneous consumers of cold-finished steel are generally quiet. The market is unchanged at 2.00c, Cleveland, on most current shipments.

Tin Plate Featured By Two Large Inquiries

Tin Plate Prices, Page 51

New York—The Nippon Oil Co. is inquiring for 22,000 boxes of tin plate. The company purchased about 25,000 boxes a month ago; four-fifths here, the remainder in England and Germany. Texas Co. is momentarily expected to place 75,000 boxes for re-export.

Pittsburgh — Despite the unchanged status of tin plate specifications and operations prospects for fair packs of leading vegetables this year are regarded as slightly better. Surplus stocks of canned goods are being disposed of fairly rapidly and the present unsatisfactory credit condition among small packers is expected to be at least partially corrected later in the year. Tin plate production holds around 45 per cent.

Plates

Barge Inquiries Active — 3000 Tons at Pittsburgh—1500 Tons Placed for Newton, Mass., Pipe

PLATE PRICES, PAGE 51

Chicago—Better conditions are in sight in the oil industry, but early reflection of the strengthened crude oil prices is not expected by tankmakers. Most views are that additional tank capacity will be deferred even until after other oil well supplies are purchased. Standard Oil Co. is doing some storage development at Wood River, Ill., requiring several hundred tons of plates. Small tankmakers have fair orders. Plate prices are nominal at 1.70c, Chcago.

Boston—An eastern Pennsylvania mill will supply 1500 tons of plates for a 60-inch electric welded pipe line for Newton, Mass. Early action is not expected on plates for the tender HICKORY by the Bath Iron Works, Bath, Me., while plates for a second destroyer to be built by the Bath works still are pending. Prices appear steadier at 1.70c, eastern Pennsylvania mill.

Philadelphia—Oil companies are placing fair orders for plates. Inquiry includes 275 tons for a project at Hopewell, W. Va. Prices are steady at 1.70c, Coatesville, Pa.

Prices were steadier and more uniform on the first sizable tonnage of plates opened for the Norfolk navy yard since April 1. About 535 tons were included in several classes, 2.12c and 2.07c, delivered, being low on two of the smaller lots, while on about 500 tons the ten bidders were closely grouped, the low being $17,708.08.

Pittsburgh—Barge inquiry is more active, requests for bids having been received recently from several users on 25 barges requiring about 3000 tons of plates and shapes. Plate orders are in unchanged volume, gen-

erally consisting of small lots. The market still is untested, but fairly steady at 1.60c, Pittsburgh.

Cleveland—Though lacking a sustaining background of orders from the general trade, a few plate projects continue to be placed. An eastern fabricating interest has been awarded 180 tons for tanks for the Ohio Salt Co., Wadsworth, O., and the Great Lakes Engineering Co., Detroit, will need about 400 to 500 tons of plates and shapes for a steel dredge hull and a steel tug which it was recently awarded. The local plate mills were off last week. Plates are held at 1.60c, Pittsburgh base.

Contracts Placed

1500 tons, 60-inch, electric welded water pipe, Newton, Mass., metropolitan district commission, to Walsh's Holyoke Steam Boiler Works, Holyoke, Mass.; Coleman Bros. Inc., Boston, general contractor.

400 tons, ten waste heat boilers for Vernon, Calif., to Consolidated Steel Corp., Los Angeles.

280 tons, plates and shapes, dipper dredge for United States engineers, Pittsburgh district, to McClintic-Marshall Corp., Bethlehem, Pa.

250 tons, tank, Verona, Ill., to Chicago Bridge & Iron Works, Chicago.

180 tons, tanks, Wadsworth, O., for Ohio Salt Co., to McClintic-Marshall Corp., Bethlehem, Pa.

140 tons, storage tank, Paterson Oil Terminal, to Chicago Bridge & Iron Works, Chicago.

130 tons, tank and tower, state home, West Haverstraw, N. Y., awarded through E. F. Busch, Riverdale, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

Unstated tonnage, tank and tower, Anthony, Kans., to Chicago Bridge & Iron Works, Chicago, $18,380.

Unstated tonnage, tank and tower, Estherville, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines, $11,500.

Unstated tonnage, gasoline storage tank, bureau of yards and docks, San Diego, Calif., to Chicago Bridge & Iron Works, Chicago, $6575.

Contracts Pending

1300 tons, oil tanks, Argentine government oil fields, early award expected.

534 tons, black medium hull plates, navy, Norfolk, Va., Central Iron & Steel Co., Baltimore, $17,798.08, low on all but 50 tons. Lows on latter classes, 2.12c and 2.07c, delivered.

275 tons, one 2,000,000-gallon tank, Cleveland; plans out.

130 tons, tank and tower state school, Warwick, N. Y.; bids April 26; previously noted as "unstated tonnage."

100 tons, two steel storage tanks, East Bay municipal utility district, Oakland, Calif.; bids April 18.

Unstated tonnage, armor plate, Rock Island arsenal, Rock Island, Ill., Jessop Steel Co., Washington, Pa., low.

Chicago Valve Co., 130 West Washington street, Chicago, has changed its capital from $35,000 to 3500 shares no par value.

Railroads

Rail Buying Fails to Develop But Fastenings Show Some Spirit—Car Building Held Back

TRACK MATERIAL PRICES, PAGE 51

New York—Pacific Fruit Express has awarded 100 underframes to the Pacific Car & Foundry Co., and Wheeling Steel Corp., has placed an order with Koppel Industrial Car Co. for repairs to 22 gondolas.

Seaport Contracting & Supply Co., New York, representing Sweet's Steel Co., Williamsport, Pa., is low on 3500 tons of 150-pound contact rail and 435 tons of 60-pound contact rail for the board of transportation. Its bids were 2.52c and 2.43c, f.o.b. cars, New York, on the 150-pound rail, No. 1 and No. 2, respectively, and 1.98c and 1.89c, f.o.b. cars, on the 60-pound rail, No. 1 and No. 2 respectively. Bethlehem Steel Co., only other bidder, quoted 2.60c and 2.51c on the 150-pound rail, No. 1 and No. 2, respectively; and 2.10c and 2.00c on the 60-pound rail.

Philadelphia—Pennsylvania railroad is asking all companies holding contracts in connection with its electrification program to supply complete data as to man-hours and where expended should the work be resumed. This is to supplement information supplied to the Reconstruction Finance Corp. This is to include data on production of raw materials.

Pittsburgh — Specifications for track material and other steel products continue at about the March rate. New business is light and inquiry also is quiet. Activity in light and relaying rails continues sharply depressed, with prices unchanged.

Cleveland—With award of the long-pending car order from the Wheeling & Lake Erie railroad still awaited, there has been little to lend feature to the local railroad market for finished steel products.

Chicago—Track fastenings sales of the last few weeks are holding up well. Orders just closed total about 3000 tons. Several miscellaneous rail orders from western roads amount to 6000 tons. Santa Fe railroad has its shops operating four days a week. This road and one or two others have been increasing specifications for steel. Word is that the Santa Fe is below its quota on some classes of freight cars, but is still undecided whether to fill its needs this year.

Car Orders Placed

Pacific Fruit Express, 100 underframes, to Pacific Car & Foundry Co., Seattle.

Wheeling Steel Corp., Wheeling, W. Va., repairs to 22 gondolas, to Koppel Industrial Car Co., Pittsburgh.

Rail Orders Placed

6000 tons, miscellaneous lots from several western roads to Chicago district rail mills.

Wire Holds Price and Buying Is Steady

Wire Prices, Page 51

New York—Trading in wire products reflects little change, although sellers still are hopeful that seasonal influences will result in a rise over the next few weeks. Nails are unchanged at $1.95, Pittsburgh, and plain bright wire at 2.20c, Pittsburgh.

Worcester, Mass.—Demand, inquiry and shipments of wire show little change. Second quarter production holds closely to first quarter figures. Prices are steady at 2.30c, base, Worcester.

Buffalo—Demand for wire products is slow, especially for heavier grades. Wire works here have suspended open-hearth operations for the time being.

Pittsburgh—Wire demand is holding its own. Specifications for manufacturers' wire have been steady and activity in some wire products has been affected adversely by unfavorable weather. This applies particularly in agricultural districts. Prices are well maintained at $1.95 for carload lots of wire nails, 2.20c for plain wire and $37 for wire rods.

Youngstown, O.—Most wire products business is manufacturers' wire, the tonnages keeping fairly regular. There is light demand for wire nails. Plain bright wire in carloads is 2.20c, Pittsburgh and Cleveland, and nails are $1.95, same bases.

Chicago—No appreciable gain is noted in merchant wire goods orders. While a number of orders have come from buyers out of the market for many months, this has little effect on the aggregate. Forward interest is lacking, but the contract price for wire nails is reported steady at $1.95, Pittsburgh-Cleveland.

Structural Shapes

Postoffice Building, 15,000 Tons, Going in May 23—Most Cheering News Is From East—Awards Run to Small Total—May's Awards Promise to Be Heavier

STRUCTURAL SHAPE PRICES, PAGE 51

New York—A spurt in the federal government building program lends support to the structural market in the East. Bids close May 23 on another postoffice department building and loading platform, Washington, requiring close to 15,000 tons. Lettings and inquiry for private construction in the metropolitan district are few and light. Bids are in on about 800 tons for towers for the department of commerce. Prices on plain material are holding on the few small lots placed at 1.60c, Pittsburgh. An upstate fabricating shop of a leading interest is closing indefinitely. Shipments have been running well ahead of bookings with fabricators for three months, reducing backlogs to a minimum in most instances.

American Bridge Co. is suspending operations at its Elmira, N. Y., Trenton, N. J., and Pencoyd, Pa., shops for several months, probably diverting considerable business to its Ambridge, Pa., works. Pencoyd's principal unit —the rolling mill—is expected to continue operating. Two eastern independent fabricating shops are reported to be liquidating.

Boston—New structural inquiry and lettings are light, few going over 100 tons. General contract for the Latin school has been let and early action on 500 tons is expected. Material for the Cape Cod pier will be purchased through the general contractors New York office. The 1.60c, Pittsburgh, price on plain material has not been tested. Bids close May 9 on the Portland, Me., post office taking about 1000 tons, and May 11 on a postoffice at Putnam, Conn., a small tonnage.

Building Trades' Employers association has posted notices on construction jobs announcing wage reductions of 25 cents an hour in four trades, including iron workers, sheet metal workers and hoisting engineers.

Philadelphia—Inquiries for two 2000-ton jobs feature structural demand. One is for 2100 tons for a Maryland state span at Annapolis, Md., and the other is for a Scranton, Pa., school which takes 2300 tons. Likewise, an upturn in small pending items is to be noted. Prices are firm on the basis of 1.70c, nearest mill.

Pittsburgh — Structural awards are slightly larger in number while inquiry also is expanding slowly. Public work is less prominent in new business although several large tonnages are involved in prospective work. Specifications for plain material lack improvement with the market nominal at 1.60c, Pittsburgh.

Cleveland—Small and isolated building projects are numerous but government-sponsored work provides the bulk. Bids on 900 tons of structural for the Cleveland postoffice foundation have been forwarded to Washington; an award is not immediately expected. Some government barracks at Fairfield, O., have been placed and the Wickliffe, O., school has been reawarded. Plain material is 1.60c, base Pittsburgh.

Chicago—Improvement in structural steel inquiry is restricted almost entirely to public projects. A number of small postoffices have become active. Mills are naming 1.70c, Chicago, for all new business in plain material, while material for some projects continues to move at 1.60c, under old contracts.

Contracts Placed

900 tons, auditorium, Grand Rapids, Mich., to R. C. Mahon Co., Detroit.

760 tons, I-beam spans, Chapman and Alda, Nebr., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

600 tons, highway bridge, Columbus Junction, Iowa, to McClintic-Marshall Corp., Bethlehem, Pa.

500 tons, addition, library of congress, Washington, to Shippers Car Line Co., Milton, Pa.; Jacobson Bros., Chicago, contractor.

450 tons, Salvation Army building, Detroit, to Palmer-Bee Co., Detroit.

450 tons, harbor cribs, Corpus Christi, Tex., to Larsen Steel Co.

400 tons, penstock, Los Angeles, to Consolidated Steel Corp., Los Angeles.

400 tons, highway bridges, Iowa, to unstated fabricators.

310 tons, Panther Hollow bridge repairs, Pittsburgh, to Fort Pitt Bridge Works, Pittsburgh.

250 tons, Reading Co. pier, Philadelphia, to Belmont Iron Works, Philadelphia.

250 tons, war department buildings, Fairfield, O., to Fort, Pitt Bridge Works, Pittsburgh.

225 tons, bridge, Los Angeles, for Pacific Electric Co., to Consolidated Steel Corp., Los Angeles.

210 tons, highway bridge, route 2, section 6, New Jersey, to American Bridge Co., Pittsburgh.

200 tons, bridge, Erie railroad, Belvidere, N. Y., to Ingalls Iron Works Co., Verona, Pa.

200 tons, highway bridge, Bridgeport, Nebr., to Omaha Steel Works, Omaha, Nebr.

175 tons, theater, Washington, to Belmont Iron Works, Philadelphia.

160 tons, highway bridge, Madison county, Illinois, to Missouri Bridge & Iron Co., St. Louis.

150 tons, lagoon bridge, Century of Progress exposition grounds, Chicago, to Gage Structural Steel Co., Chicago.

140 tons, reconstruction, Driggs avenue, Brooklyn, N. Y., approach, Williamsburg bridge, to Magor Car Corp., New York, at $7294. Ten bidders, department of purchase, April 8.

120 tons, miscellaneous steel, municipal sewage plant, White City development, Cleveland, to Republic Structural Iron Works, Cleveland.

110 tons, administration building, Mt. Auburn cemetery, Cambridge, Mass., to Groisser-Shlager Iron Works, Boston.

106 tons, 66 of shapes and 40 of bars, postoffice addition, Pocatello, Idaho, to Pittsburgh-Des Moines Steel Co., Pittsburgh, and Steel Engineers Co., Salt Lake City, Utah; Tapager Construction Co., Albert Lea, Minn, contractor.

104 tons, school, Wickliffe, O., reawarded to Burger Iron Works, Akron, O. First award to Republic Structural Iron Works, Cleveland rejected.

100 tons, two cranes for Vernon, Calif., to Whiting Corp., Harvey, Ill.

100 tons, bridges, Saratoga county, New York, to Lackawanna Steel Construction Co., Buffalo.

100 tons, postoffice, New Kensington, Pa., to unstated.

100 tons, biology building, University of Richmond, Richmond, Va., to Cruickshank Iron Works, Richmond, through A. E. Perrin.

100 tons, sign support, Philadelphia Savings Fund building, Philadelphia, to Morris-Wheeler & Co. Inc., Philadelphia.

100 tons, Penn Charter school, Philadelphia, to Robinson Iron & Steel Co., Philadelphia.

Awards Compared

	Tons
Awards, week ended Apr. 16	7,770
Awards, week ended Apr. 9..	17,303
Awards, week ended Apr. 2..	9,535
Awards, this week in 1931	20,395
Av. weekly awards, 1931....	34,236
Av. weekly awards, 1932....	14,112
Av. weekly awards, March....	17,003
Awards to date, 1931.....	710,682
*Awards to date, 1932.....	225,790

*Revised.

Contracts Pending

8000 tons, addition, department of agriculture building, Washington.

7500 tons, addition, postoffice, Washington, B-W Construction Co., Chicago, low $2,999,000, lump sum; George A. Fuller Co., second, $3,172,000. Twen-

ty-one bidders, April 8.

2300 tons, school Scranton, Pa.; bids May 9.

2000 to 3500 tons, municipal auditorium, St. Louis; bids May 17, board of public service.

1800 tons, state steel and concrete bridge, South river, Anne Arundel county, Maryland; bids April 18.

1000 tons, postoffice, Portland, Me.; bids April 9.

835 tons, bridge, Manistee county, Michigan, bids at Lansing, Mich., May 11. Included, 90 tons machinery, 31,200 feet of sheet steel piling.

735 tons, bridges, Missouri highways.

600 tons, bridge work for Iowa highway commission.

500 tons, agricultural building, Century of Progress, Chicago.

400 tons, shapes and bars, building and additions, United States marine hospital, Louisville, Ky.; Hanson Brothers, Chicago, low.

250 tons, store, S. H. Kress & Co., East Orange, N. J.

200 tons, state bridgework, Lawrence county, Pennsylvania.

200 tons, postoffice, Fort Myers, Fla.; Rosen & Fischel Inc., Chicago, low, bids April 13.

180 tons, postoffice and courthouse, Lewisburg, Pa.; Algernon Blair, Montgomery, Ala., low $168,830; bids April 13.

175 tons, school, Pottstown, Pa.; A. W. Funk & Co., Philadelphia, contractor.

165 tons, bridges, Coal county, Oklahoma, for state highway commission; bids April 19.

150 tons, passenger station, Norristown, Pa., for Reading Co.; William Steele, Philadelphia, contractor.

150 tons, estimated, state sanitarium, Selinsgrove, Pa.; Hood & Gross, Philadelphia, low on general contract.

150 tons, hospital, Mont Alton, Pa.; J. A. Frielino, Leechburg, Pa., contractor.

150 tons, state bridge, New York; April 26.

125 tons, state bridge, North Anson, Me.; Lackawanna Steel Construction Co., Buffalo, low at $10,562; bids of April 12.

111 tons, mostly angles, navy, Norfolk, Va., Morris Wheeler & Co., Philadelphia, low $4580.13, angles, and 4.82c on 1200 pounds channels.

100 tons, postoffice, Dover, Del.; bids May 2.

100 tons, personnel quarters and garage, United States marine hospital, New Orleans; R. P. Farnsworth & Co. Inc., New Orleans, low.

100 tons, addition to state hospital, Stockton, Calif.; Guth & Fox, contractors.

100 tons, miscellaneous shapes, plates and floor plates, Panama; May 3.

Unstated tonnage, four 130-foot-high truss spans, state highway bridge, Lone Rock, Wis.; bids soon.

Unstated tonnage, state highway bridge over Chippewa river, Pepin, Wis.; plans in progress; estimated cost $1,000,000.

Unstated tons, addition, new buildings, sea wall and light tower foundations, United States marine hospital, Detroit, two contracts, Otto Misch Co., Detroit, low, $349,600 and $395,600; bids April 8.

Unstated tonnage, girls' high school, Philadelphia; plans expected in two months.

Concrete Bars

State and Highway Work Declines — Western Public Projects Develop Concessions—800 Tons Bridgework Closed in Wisconsin—6000 Tons Tentatively Awarded

REINFORCING BAR PRICES, PAGE 51

New York — While inquiry is slightly heavier, led by the foundations for the federal courthouse which will take several thousand tons, lettings of reinforcing steel are light. Some tonnage has developed for state highway and bridge work, but inquiry from that source is below normal. Federal projects opening in the East outside New York within the next few weeks require large tonnages. Prices on what minor business being placed at generally 1.60c, Pittsburgh. The largest job in some time here, about 6000 tons for the route 25 northern New Jersey viaduct, has been tentatively awarded.

Boston—New England Road Builders' association has protested diversion of state highway funds to other purposes. This has had a retarding influence on the usual spring pickup for reinforcing steel in state road and bridge work. Fresh inquiry is light and lettings limited largely to small lots. Prices on mill lengths are nominally unchanged at 1.60c, Pittsburgh, but untested.

Philadelphia—While a fair tonnage is pending, reinforcing steel orders run to small scattered lots. Mill lengths are holding at 1.60c, Pittsburgh, cut lengths, 1.75c, Pittsburgh.

Chicago—About 800 tons of bridgework has been closed in Wisconsin, and 500 tons is active there, including 400 tons for an overhead bridge at Chippewa Falls, Wis. Postoffice jobs are numerous, but private reinforcing bar work consists chiefly of alterations and small jobs. Bids on public work disclose concessions of $1 to $1.50 a ton on billet bars. Low on the foundations for the appraisers' stores, Chicago, is the B-W Construction Co., Chicago, at $74,800.

Pittsburgh—Inquiry for reinforcing bars, although slightly more active in some districts, generally is unchanged. New business is steady while specifications are unimproved from the recent rate. The market generally is steady at 1.60c, Pittsburgh.

Awards Compared

	Tons
Awards, week ended Apr. 16	**8,206**
Awards, week ended Apr. 9	**2,170**
Awards, week ended Apr. 2	**3,502**
Awards, this week, 1931	**1,948**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932	**4,707**
Av. weekly awards, March	**3,997**
Total awards to date, 1931	**116,302**
Total awards to date, 1932	**75,325**

Contracts Placed

6000 tons, including 2,600,000 square feet, steel mats, deckwork, route 25, viaduct, northern New Jersey, tentatively awarded to Kalman Steel Corp., Bethlehem, Pa., through Fredburn Construction Co., New York.

400 tons, quarry overhead bridge, Waukesha, Wis., to Concrete Engineering Co., Omaha, Nebr.

400 tons, bridge approaches and piers, DePere, Wis., to Cook & Brown, Oshkosh, Wis.

250 tons, assembly plant, Ford Motor Co., Alexandria, Va., to Rosslyn Steel & Cement Co., Rosslyn, Va.

200 tons, postoffice, Sacramento, Calif., to Sweets Steel Co., Williamsport, Pa.

200 tons, veterans hospital, Aspinwall, Pa., to Joseph T. Ryerson & Son Inc., Chicago.

150 tons, substructure, St. Paul postoffice, to Concrete Engineering Co., Omaha, Nebr.

150 tons, mechanical building, Purdue university, Lafayette, Ind., to Truscon Steel Co., Youngstown, O.

130 tons, two state bridges, Catlettsburg, Ky., to Truscon Steel Co., Youngstown, O.; Ashland Supply Co., Ashland, Ky., contractor.

120 tons, veterans' hospital, Sheridan, Wyo., to Inland Steel Co., Chicago.

106 tons, sewage disposal plant, Traverse City, Mich., to Capitol Steel Corp., Lansing, Mich., through H. G. Christman-Lansing Co., Lansing. Jarvis Engineering Co., Lansing, awarded 23 tons structurals.

Contracts Pending

1750 tons, Missouri highway construction.

400 tons, postoffice, Norfolk, Va.; Virginia Engineering & Contracting Co., Newport News, Va., low on general contract.

400 tons, overhead bridge, Chippewa Falls, Wis.

235 tons, bridge over Virgin river, Clark county, Nevada; bids April 13.

232 tons, memorial entrance, Arlington National cemetery, Washington; bids May 11.

216 tons, highway work, Riverside coun-

ty, Calif.; bids opened.
155 tons, bridge, Manistee county, Michigan; bids at Lansing, Mich., May 11.
100 tons, Gerty's run bridge, Millville, Pa.
Unstated tonnage, veterans' hospital, Danville, Ill.

Bolt, Nut Demand Steady But Fails To Gain

Bolts, Nuts, Rivets Prices, Page 51

Pittsburgh—Bolt, nut and rivet specifications are at an unchanged rate. Only a few buyers specified in sufficient volume the latter part of March to cover requirements far into April, most consumers specifying according to early needs. The new price of 75 off for bolts and nuts is holding well, with large rivets continuing 2.25c, Pittsburgh.

Cleveland—In spite of current spottiness in bolts and nuts, a more hopeful outlook is held for automobile purchases in May. Jobbing outlets, having specified rather freely against contracts, have subsided. The 75 off list price has presented no difficulties in closing on the present small volume of business.

Chicago — Specifications for bolts, nuts and rivets have been tapering this month. No substantial automotive business is coming out. Discounts of 75 per cent off for carriage and machine bolts are untested.

Semifinished Firmer; Sales Remain Light

Semifinished Prices, Page 58

Pittsburgh — Semifinished steel specifications are light, with shipments still being made against orders received in closing out old contracts. Requirements of finishing mills, however, are unchanged. Producers are taking a firmer price stand, the market being quoted nominally at $27 for rerolling billets, slabs and sheet bars, although new business is dull and provides little test. Forging billets also are quiet, continuing $33 to $34.

Youngstown, O.—Sheet bars and billets continue in desultory movement from producing mills. Demand from sheet producers is moderate. Billets and slabs are $27, Youngstown, Pittsburgh and Cleveland, while sheet bars are $26.

Record for Ferro Enamel

In tonnage of porcelain enamel shipped, March set a new high record for the Ferro Enamel Corp., Cleveland.

Pipe

Southern California Line Award 8000 Tons, Largest in Months— More Tonnage for Irak Pending

PIPE PRICES, PAGE 66

New York—American pipemakers may be asked soon to bid on 13,000 to 20,000 tons of 10¾-inch pipe, for an additional 150 to 225 miles for the Irak Petroleum Co. in Persia. This is in addition to the 125,000 tons placed recently, 50 per cent going to France, 35 per cent to England and 15 per cent to Germany. American producers stand a fair chance of taking all the proposed tonnage. The Argentine government will take bids to May 2 on 3500 tons of oil well casing.

New York and other large eastern cities are buying little cast iron pipe, the bulk of inquiry being from the smaller communities. Close to 1000 tons is pending for New York state projects. Prices are easy on cast.

Chicago—Natural Gas Pipe Line Corp. announces indefinite postponement of the 170-mile 20-inch spur from the Texas-Chicago natural gas trunk line, which was to be built from Chicago to Milwaukee this spring. Bids went in April 15 on 500 tons of miscellaneous cast sizes for the sewage disposal plant at Elgin, Ill. From 300 to 500 tons for waterworks and sewage disposal at Moline, Ill., and the Wilmette, Ill., waterworks, 600 tons, may be held up due to the lack of bidders for the bonds. St. Louis took bids April 15 on 20,000 feet, 8, 10 and 12-inch cast.

Boston—Metropolitan district commission, Boston, closes on 600 tons of 48-inch cast iron pipe April 21. Small orders have been placed by Medford, Northampton and Canton, Mass. Stoneham, Mass., will close soon for a force main. Reading Iron Co. booked a small tonnage of wrought for the Monson state hospital, Palmer, Mass. Cast pipe prices continue weak.

Pittsburgh—Republic Steel Corp. booked 8000 tons of 12¾ and 8⅝-inch pipe for a California line, one of the first important line pipe projects to be closed this year. Orders for other proposed domestic lines are slow to materialize and few inquiries are appearing. Activity in other tubular products is quiet and unchanged, with demand for standard pipe lacking in improvement over recent volume. Oil country goods and tubing continue slow.

Cleveland—Tubular products demand still is generally depressed, but with a slight ray of encouragement from the motor industry for mechanical tubing. Steel line pipe buying is absent. A Detroit contractor has not as yet closed on pipe for the Detroit postoffice or the Atlanta, Ga., postoffice, for which he has contracts.

Cast Pipe Placed

560 tons, 6 and 8-inch class 150, East Bay municipal utility district, Oakland, Calif., to United States Pipe & Foundry Co., Birmingham, Ala.
248 tons, 4 and 6-inch class B, San Diego, Calif., to unnamed interest.
200 tons, 6 and 8-inch, Fond du Lac, Wis., to Lynchburg Foundry Co., Lynchburg, Va.
200 tons, 4, 6 and 8-inch, Verona, Wis., to American Cast Iron Pipe Co., Minneapolis.
125 tons, 6 and 8-inch, Medford, Mass., to Warren Foundry & Pipe Co., Phillipsburg, Pa.
100 tons, 8 and 10-inch, Northampton, Mass., to United States Pipe & Foundry Co., Burlington, N. J.
100 tons, 6-inch, Canton, Mass., to Warren Foundry & Pipe Co., Phillipsburg, Pa.
Unstated tonnage, 6, 8 and 12-inch, Stevens Point, Wis., to American Cast Iron Pipe Co., Minneapolis.

Steel Pipe Placed

8000 tons, 68 miles 12¾-inch and 20 miles 8⅝-inch line pipe for Southern Counties Gas Co., Los Angeles, to Republic Steel Corp., Youngstown, O.
200 tons, various sizes, heating, University of Texas buildings, to Youngstown Sheet & Tube Co., Youngstown, O.

Cast Pipe Pending

3728 tons, 8 and 12-inch class 150, Los Angeles; bids in.
1400 tons, 6, 8 and 12-inch for St. Paul, Minn.; bids April 19.
610 tons, 48-inch, class B, bell and spigot, Quincy and Weymouth, Mass., metropolitan district commissioner, Boston; bids April 21.
500 tons, miscellaneous sizes, Moline, Ill., waterworks; bids April 15.
20,000 feet, 8, 10 and 12-inch for St. Louis; bids April 15.
Unstated tonnage, 890 feet 6-inch class A force main, 150 feet 21-inch class A river crossing, 280 feet 24-inch class A river crossing, Watertown, Wis.; bids in.

Steel Pipe Pending

3500 tons, oil well casing, Argentine government; bids May 2.
Unstated tonnage, 10,000 feet, 3-inch, and 20,000 feet, 1-inch, galvanized steel or wrought, Panama, May 3.

Strip

Prices Hold Well with Demand Small and Automotive Needs Not Yet Making Expected Gain

STRIP PRICES, PAGE 51

Pittsburgh — Important releases for automotive strip tonnage are yet to be received. Specifications during the past week were at an unchanged rate, at about the volume of the preceding six weeks. Operations still are tending downward, recently averaging 15 to 20 per cent. No deviations are reported from the general market of 1.40c to 1.50c and 1.50c to 1.60c for hot strip. Cold-rolled strip usually is 2.00c.

Worcester, Mass.—Inquiry remains light. Prices, however, are steadier at 2.20c, Worcester, for cold rolled.

New York—While strip demand has shown no gain, it has held its own, with hot strip at 1.40c and 1.50c, Pittsburgh, and cold-rolled at 2.00c, Pittsburgh.

Philadelphia—Steel strip is firm at present levels and demand is light. Hot-rolled strip is quoted at 1.40c and 1.50c, Pittsburgh, for carloads and cold-finished is 2.00c, Pittsburgh.

Youngstown, O.—Strip steel orders are in fair volume, mostly for hot-rolled of narrower widths. While some is going to auto partsmakers, considerable is moving to miscellaneous consumers.

Cleveland—Hot-rolled strip users ordered a little more freely at the close of March than during the past week. Buyers are paying 1.40c and 1.50c, Pittsburgh, minimum for this grade. Cold-rolled is reported firmly held at 2.00c, Cleveland. An automotive partsmaker at Muncie, Ind., and one at Toledo, O., have been lessening their commitments, but encouragement is held out for May.

Chicago—Hot and cold-rolled strip mills are getting a sprinkling of automotive business. A few partsmakers on Ford business have placed orders, while others have material shipped to them from outside. Hot-rolled mills are operating at about 20 per cent, and cold-rolled 18 to 20 per cent. Wide hot-rolled sizes are reported steady at 1.50c to 1.60c, Chicago, while narrow strip is $2 above the range for wide.

Steel Operations Hold 22 Per Cent Unchanged

Pittsburgh—Ingot production was fractionally higher during the past week at 21-22 per cent compared with 21 the preceding week. The local rail mill has resumed operations for a limited period. Active blast furnaces number 9 of the 54 steelworks stacks. Sheet and tin plate operations are unchanged at 25 and 45, respectively.

Operations, week ended April 16	**22**
Operations, week ended April 9	**22**
Operations, week ended April 2	**23**
Operations, this week, 1931	**50.5**
High for 1932,, Feb. 6	**28.5**
Low for 1932, Jan. 2	**22**

Strip output is lower at 15 to 20, with pipe unchanged at that figure.

Weirton Steel Co. tin plate mill at Clarksburg, W. Va., has resumed.

Philadelphia—Steelmaking operations in the East are off a point, to 14-15 per cent, with no major change either way in sight.

Buffalo — Buffalo district operations probably will show about a nine point increase this week to 38 per cent, due to staggered schedules at the Republic works. Tentative operating schedules call for 13 open-hearth furnaces. Nine were active last week, and probably also next week.

Youngstown, O.—District steel operations last week were unchanged from the prior week at 20 per cent of capacity. A rise of several points is anticipated for the present week, as at least one idle open hearth plant will resume. Carnegie Steel Co.'s Ohio works plant, idle last week for the first time in many years, will resume shortly. Heavier automobile buying within the next few days is expected.

Cleveland—Steel ingot capacity of this district was engaged at a flat 20 per cent as of the close of last week, against 26 per cent the prior week. This represents four active open hearths for Corrigan, McKinney Steel Co., and three for American Steel & Wire Co. There are 34 potential open hearths in the district. Some resumption is expected this week, either to 23 or 26 per cent, depending on orders one interest expects to receive.

Chicago—This week's schedules indicate a further slight drop in ingot production from the week just closed. Last week's production was 20 to 22 per cent, while schedules for this week show only about 20 per cent. Blast furnace production is unchanged with nine of the district's 36 steelworks stacks in blast. Sheet mills are down slightly from last week, while a small gain is noted in bar mill production.

Birmingham, Ala. — Steel ingot production will be virtually doubled this week against last week when, at 50 per cent of capacity for the district, ingot operations will embrace renewed activity at the Ensley, Ala., works of the Tennessee Coal, Iron & Railroad Co. It is expected operations there will include two blast furnaces, rails mills and starting up of five open hearths.

Warehouse Sales Under Usual Seasonal Volume

Warehouse Prices, Page 66

New York—Foreign steel continues a disturbing factor in the warehouse market, although volume is light. April has brought practically no improvement, structural demand being far below seasonal.

Boston—Warehouse volume continues slack, dullness prevailing and orders generally in small lots. Prices are nominally unchanged, but are shaded in some quarters on spotty inquiries.

Baltimore—Foreign concrete bars stocked in the Baltimore market tend to weaken prices for bars, with some business going at 2.50c out of warehouse. Competition with imported steel products is no keener, but continues an important factor, although the aggregate volume with jobbers is light. Prices are unchanged with the exception of reinforcing bars.

Pittsburgh—Adverse weather is retarding demand for some products, with general buying holding well. Prices are unchanged and steady.

Detroit—Warehouse steel buyers do not increase their orders in number or tonnage. In spite of some good daily totals, warehouse interests have found April as dull as March.

Cincinnati — Warehouse demand remains sluggish, at about the rate in first quarter. Prices are unchanged.

Chicago—A shade of improvement is noted in warehouse orders. Continued gains have occurred in the number of orders during the last two weeks for the first time this year over a two-week period.

St. Louis—Demand for building materials and other seasonal iron and steel goods from store has failed to develop in usual volume and April sales are disappointing.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.00
Pittsburgh, dist. fur.	15.50 to 16.00
Pittsburgh, delivered	16.13 to 17.13
Valley furnace	15.00 to 15.50
Cleveland fur., local del.	15.50
Philadelphia, delivered	15.26 to 15.76
Virginia furnace	17.50
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.40 to 19.90
Buff., all-rail, Newark	17.78 to 18.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.76 to 16.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	16.26 to 16.76

MALLEABLE

Valley furnace	15.50
Cleveland fur., local del.	15.50
Pittsburgh dis. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Chicago, furnace	16.00
Buffalo fur., local del.	15.50 to 16.00
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Eastern Penn., del.	15.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	15.50 to 15.75
Pittsburgh, delivered	16.63 to 17.13
Pittsburgh, furnace	16.00

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	15.00
Pittsburgh district fur.	15.50
Pittsburgh, delivered	16.13 to 16.63

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.76 to 9.16
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	9.50 to 10.00
North African low phos.	8.00 to 9.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$10.60 to 10.85
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	23 to 24 cents
South African, 49-51%	22 to 23 cents
South African, 44-47%	21.00 to 21.50
Indian, 48-50% (nom.)	24 cents
Brazilian, 46-48% (nom.)	20 to 21 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00
Pittsburgh, bessemer	27.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	32.75
Chicago	28.00
Forging, Chicago	34.00 to 35.00
Forging, Pittsburgh	33.00 to 34.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	26.00 to 27.00
Youngstown	26.00
Cleveland	26.00
Chicago	27.00

SLABS

Pittsburgh	27.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	80.24
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	85.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.	113.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	19.50

Pig Iron

Automotive Shipments and Inquiries Expand—Two Alabama Blast Furnaces to Resume

PIG IRON PRICES, PAGE 58

Pittsburgh—Pig iron business and inquiry are in the former light volumes. Occasional orders are received for carload lots, but operations by foundries and steel producers are unimproved and no interest is being shown in future iron requirements. Shipments continue at about the low March rate. Prices are partly nominal, usually $16, Pittsburgh, for No. 2 foundry, bessemer and malleable.

Boston—New England pig iron consumers are buying close to requirements, with few exceptions showing little interest in the future. Domestic producers are seeking business in southern New England at $18 and $18.50, delivered in the Providence district, one quoting under $18. Weekly sales continue under 1000 tons. Close to 1240 tons of Indian iron arrived recently consigned to one seller, a portion going to New York. It is reported holders of foreign iron are firmer on prices.

Philadelphia—Pig iron buying is slow and prices are unchanged. Of the recent importations of Dutch iron, 6500 tons went to one pipemaker, 3000 tons to another, and 600 tons to a third. On the basis of this report, one pipemaker purchased more than 26,000 tons of foreign iron in recent months.

Buffalo—Pig iron inquiry continues on a small scale. Shipments in the first half of April showed no great increase over the low averages of March. A fleet of barges will load iron on arrival here the latter part of April, opening water shipments.

Youngstown, O.—Purchases of pig iron continue in occasional small lots for prompt delivery. One of the two district ingot mold foundries takes hot-metal about half the time. Bessemer, malleable and No. 2 foundry bring $15, valley. Basic is nominal at $14.50 to $15, while gray forge and No. 3 foundry are $14.50.

Cleveland—Two inquiries, each for approximately 1000 tons of pig iron, and both from automotive foundries, give further evidence of improvement in demand from these sources. Shipments continue to gain, due mainly to a pick up in automotive work. It appears that the total this month will exceed that of March. Other consuming lines are quiet, sales for the week by furnace interests with headquarters in Cleveland being approximately 4000 tons. The Cleveland furnace price of $15.50, base, for local delivery, is nominal, as little business has been transacted here recently. For nearby shipment the usual price is $15, base.

New York—Pig iron sales for the week totaled 1200 to 1500 tons. American Locomotive Co. bought 150 tons for Schenectady, N. Y. The A. P. Smith Mfg. Co., East Orange, N. J., is about to place 200 tons. The Chateaugay stack at Standish, N. Y., is out after operating since January.

Cincinnati — An Ohio melter is about to close for 500 tons of northern iron, but other new business is restricted to carload sales. The melt remains low. An Indiana foundry is inquiring for 1000 to 1500 tons of malleable iron, for automotive castings. Prices are unchanged.

Chicago—Merchant pig iron sales prospects for second quarter have dimmed perceptibly in the last ten days. No immediate reduction in merchant furnace activity is expected, a Federal and an Iroquois stack being in blast at South Chicago. Price concessions occur mainly in higher silicon grades. Buyers who can accept shipments of higher silicon iron have been obtaining lower prices, which if figured back to base, would mean even lower than $16 for base grades. Silicon extras have been waived on 4 per cent silicon iron. Shipments are about equal to the opening weeks of March.

St. Louis—Pig iron shipments have not improved, holding to the March rate, lowest of the year. Schedules at jobbing foundries, wheel manufacturing plants and other specialty makers average about two days per week. Many stove plants are idle. Actual prices on pig iron are difficult to determine, quotations being governed by circumstances in individual transactions.

Toronto, Ont.—Sales continue in practically the same volume as reported for several weeks, few orders exceeding single carloads.

Birmingham, Ala.—The Tennessee Coal, Iron & Railroad Co., will resume operation of two blast furnaces April 18, as part of its announced program for partial operations of five open-hearth furnaces and rail mills at Ensley. Twelve hundred men will return to work on part time. The Wrigley charcoal iron furnace of the Tennessee Products Corp., Lyles, Tenn., inactive since April 4, 1931, recently was relighted. Melters generally continue to buy only for immediate needs, and prices are unchanged.

Ferromanganese Demand Aided by Auto Activity

Ferroalloy Prices, Page 58

New York—Sellers of ferromanganese look for a further slight increase in specifications as the month advances, reflecting indirectly improved demand from the automotive industry. Little gain in other directions appears likely at this time. The market is $75, duty paid, on contracts up to 1000 tons. Domestic spiegeleisen, 19 to 21 per cent, is unchanged at $27, furnace.

Should the Ford Motor Co. adhere to the 26 to 28 per cent manganese content specified in its recent inquiry for 700 tons of spiegeleisen the award will go to foreign producers. Domestic sellers, however, are hopeful of obtaining the business on a 19 to 21 per cent basis.

Pittsburgh—Specifications for ferromanganese and spiegeleisen lack improvement while shipments have moderated slightly over the past several weeks, and currently are near the lowest level for the year to date. Spot buying of practically all ferroalloys is unimproved with prices generally unchanged. Small lots of ferromanganese continue $75, with spiegeleisen $27, furnace.

Ore Companies Deciding Employment Programs

Iron Ore Prices, Page 58

Cleveland—Iron ore company conferences are under way, as usual at this time, but instead of outlining programs for getting out tonnage, they have mainly to do with balancing production with restricted demand, and giving some employment to miners. No iron ore has been loaded as yet, and the few vessels that have started from winter quarters at lower lake ports are engaged only in preparations for carrying coal. Some ore, however, will be shipped this month. Railroads have not reached a compromise on the question of assessing a 6-cent freight surcharge. Upper and lower lake roads may insist on imposing the full amount. Inquiries for ore have not appeared, and prices await further determination.

Scrap + Baling = $$$

WE BUILD

BALING PRESSES

HYDRAULIC PRESSURE PUMPS

HYDRAULIC STRAIGHTENERS

SPECIAL HYDRAULIC PRESSES

ACCUMULATORS

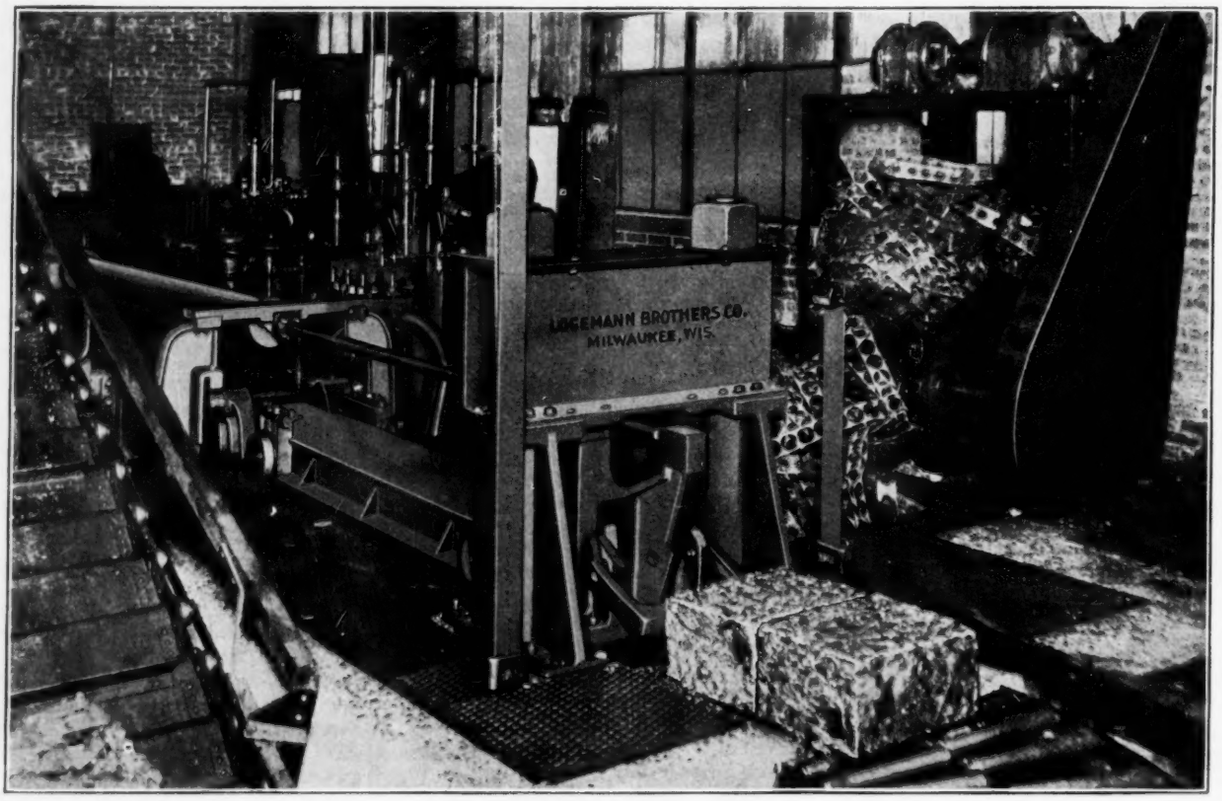
Write Us Your Problems

Hydraulically-compressed scrap commands at all times the best price - - can be more economically handled - - can be readily held for favorable markets.

Baling practically eliminates corrosion - - saves much heat in remelting - - permits easy loading of scrap cars to capacity.

The installation below is in a plant making automotive electrical equipment. Scrap comes to the baling room over the horizontal conveyor at the right, is caught by the hopper, while press is finishing a bundle, then automatically charged into press. Press cover shoves the finished bundles to the rollers carrying them to the inclined apron - conveyor at the left, this discharges directly into gondola-car outside.

Our Engineering Department, with years of experience on installations of all kinds, is at the service of interested scrap - producers. Write us.



LOGEMANN BROTHERS COMPANY

3126 W. BURLEIGH STREET — MILWAUKEE, WISCONSIN

BRANCH OFFICES IN ALL PRINCIPAL CITIES

Scrap

Prices Yielding Slightly with Many Grades Nominal—Few Sales, and Shipments Restricted

Chicago — Steelmaking scrap grades have turned definitely weaker, following a period of stronger sentiment. Heavy melting steel is down 25 cents to a range of $6.50 to $7, following a sale of 3000 to 4000 tons to the Gary consumer on the basis of $7, Chicago switching district. This represents a drop in steelmaking grades here of $1 a ton since the first of the year. A cargo of 2500 to 3000 tons of cast borings will be shipped about April 22 from the East Chicago docks to a lower lake furnace. More borings are being accumulated under speculative buying for probable movement by boat this season. Foundry inquiry for scrap is negligible, even on recent business from malleable shops.

Boston — Chemical borings are

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.00 to 7.50
Boston, dealers	3.75 to 4.00
Buffalo, No. 1	8.00
Buffalo, No. 2	6.25 to 6.50
Chicago	6.50 to 7.00
Cinci., deal.	6.75 to 7.25
Cleve., No. 1	7.25 to 7.50
Cleve., No. 2	7.00 to 7.25
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.00 to 4.50
E. Pa. del. mill	7.00 to 7.50
N. Y. deal. R. R.	4.50 to 5.00
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	6.75 to 7.25
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	10.00

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.50
Chi. (Factory)	5.75 to 6.25
Cleveland	7.00
Detroit, dealers	5.75 to 6.25
E. Pa. new mat.	6.50 to 7.00
Pittsburgh	9.75 to 10.25
Valleys	9.50 to 10.00

BUNDLED SHEETS

Buffalo	5.25 to 5.50
Cinci., deal.	6.00 to 6.50
Cleveland	6.00 to 6.50
Eastern Pa.	5.50
Pittsburgh	8.50 to 9.00
St. Louis	2.50 to 3.00

SHEET CLIPPINGS LOOSE

Chicago	3.50 to 4.00
Cincinnati	3.50 to 4.00
Detroit, dealers	3.00 to 3.75
St. Louis	2.50 to 3.00

STEEL RAILS SHORT

Birmingham	11.00 to 11.50
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 11.00
Chicago (3 ft.)	8.50 to 9.00
Chicago (2 ft.)	9.50 to 10.00
Cinci., deal.	10.50 to 11.00
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.00 to 12.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	4.50 to 5.00
Buffalo	8.50 to 8.75
Chicago, net	5.75 to 6.25
Cinci., deal. net	4.00 to 4.50
Det., net deal.	3.00 to 3.50
Eastern Pa.	7.00
N. Y., deal. mill	4.00 to 4.50
St. Louis	6.00 to 6.50

COUPLERS, SPRINGS

Buffalo	9.75 to 10.25
Chicago	8.00 to 8.50
Eastern Pa.	8.50 to 9.50
Pittsburgh	10.50 to 11.00
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	7.50 to 8.00
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.00 to 11.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	10.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts., sheet bar crops	12.50 to 13.00

FROGS, SWITCHES

Chicago	6.75 to 7.25
St. Louis	7.50 to 8.00

SHOVELING STEEL

Chicago	6.50 to 7.00
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	6.50 to 7.00
Boston, dealers	6.50 to 7.00
Buffalo, No. 1	5.00 to 5.50
Buffalo, No. 2	8.00
Chicago, No. 1	6.25 to 6.70
Chicago, No. 2	6.50 to 7.00
Cinci., No. 2	6.50 to 7.00
Eastern Pa.	8.00
N. Y., No. 1, deal.	5.00 to 5.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	8.00 to 8.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	6.25 to 6.50
Chicago, No. 1	5.00 to 5.50
Cinn., No. 1 dl.	4.75 to 5.25
Cinn., No. 2	3.00 to 3.50
Cleve., No. 2	4.25 to 4.50
Det., No. 1 new deal.	5.00 to 5.50
St. L., No. 1	5.00 to 5.50
Val. new No. 1	9.00 to 9.50

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.05 to 1.55
Buffalo	4.75 to 5.25
Chicago	4.00 to 4.25
Cinn., deal.	3.25 to 3.75
Cleveland	3.50 to 4.00
Detroit	3.50 to 4.00
Eastern Pa.	4.00 to 4.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00
St. Louis	2.50 to 3.00
Valleys	7.25 to 7.75

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	.75 to .90
Buffalo	6.00 to 6.25
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
N. Y. deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	5.50 to 6.50
Boston, dealers	1.00 to 1.25
Buffalo	5.75 to 6.25
Chicago	4.50 to 5.00
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.00 to 11.00
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.50 to 7.00
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	4.00 to 4.50

RAILROAD GRATE BARS

Buffalo	5.25 to 5.75
Chicago, net	5.50 to 6.00
Cincinnati	4.50 to 5.00
Eastern Pa.	7.00
N. Y., deal.	4.00 to 4.50
St. Louis	5.25 to 5.75

FORGE FLASHINGS

Boston, dealers	3.00 to 3.50
Buffalo	6.25 to 6.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.00 to 5.50

FORGE SCRAP

Boston, dealers	2.00 to 2.25
Chicago	9.50 to 10.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	6.25 to 6.75
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	6.75 to 7.25
Chi., steelworks	5.75 to 6.25
Cleveland	6.75 to 7.00
Eastern Pa., del.	6.50 to 7.00
Pittsburgh, O. H.	8.50 to 9.00
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	10.50 to 11.50
Boston, ship. pt.	9.00 to 10.00
Buffalo	12.00 to 12.50
Chicago	11.25 to 11.75
Eastern Pa.	14.50 to 15.00
St. Louis	10.50 to 11.00

SHAFTING

Boston, ship, pt.	8.50 to 9.00
Chicago	7.30 to 7.85
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	13.00 to 14.00

CAR WHEELS

Birming. iron	8.00 to 9.00
Boston, iron	10.00 to 11.00
Buffalo, iron	9.25 to 9.75
Buffalo, steel	9.75 to 10.25
Chicago, iron	7.00 to 7.50
Chi., rolled steel	8.50 to 9.00
Cincinnati iron	8.50 to 9.00
E. Pa. steel	8.50 to 9.00
E. Pa. iron	9.50 to 10.00
Pitts. iron	10.00 to 10.25
Pitts., steel	10.50 to 11.00
St. Louis, iron	6.00 to 6.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	7.00 to 8.00
Buffalo (Mach.)	9.50 to 10.00
Buffalo, cupola	8.50 to 9.00
Boston, textile	8.00 to 8.50
Chicago, mach.	8.40 to 8.95
Chi., railroad	7.00 to 7.55
Chicago, agri.	6.45 to 7.00
Cinn., mach. cup.	8.50 to 9.00
Cleve. cupola	7.50 to 8.00
Det., net deal.	8.00 to 8.50
E. Pa. cupola	9.50 to 10.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	11.00
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston, del.	4.00
Bost., mach. cast	7.50 to 8.00
Buffalo, break	8.00 to 8.50
Cleve., break	4.00 to 4.50
Detroit, auto, net deal.	10.00 to 10.50
Det., break., dl.	4.75 to 5.25
Eastern Pa.	9.00
N. Y. No. 1 dl.	5.50 to 5.75
N. Y. break, dl.	5.00 to 5.25
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	8.00 to 8.50
Buffalo	9.00 to 9.50
Chicago, agri.	6.00 to 6.50
Chicago, R. R.	6.50 to 7.00
Cinci., R. R. del.	8.75 to 9.25
Cinci., agri. del.	8.50 to 9.00
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.00 to 9.50
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING
5 feet and over

Birmingham	9.00 to 10.00
Boston, deal.	5.50 to 6.00
Buffalo	8.50 to 9.00
Chicago	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
New York	5.25 to 5.75
St. Louis	9.00 to 9.50

LOCOMOTIVE TIRES

Chicago, cut	8.00 to 8.50
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	9.50 to 10.00
Buffalo	10.00 to 11.00
Eastern Pa.	10.00 to 11.00
Pittsburgh	11.00 to 11.50

easy, as low as $4.75 being offered by some dealers while others are offering up to $5.50. Rerolling rails are steady and a small tonnage sold at $8, Boston. Most scrap grades are dull, however. Sales of textile machinery scrap are light at $4.25 for rail shipment, but reports of $7, delivered to a New Jersey point by barge, has failed to interest shippers because of the low price after charges.

Weakness has developed in several grades, notably heavy and No. 2, cast, while some dealers offer $3.75 to $4 for heavy melting steel. Dealers' buying prices are also lower on yard steel with offers of $2.75. Heavy cast is down to $4 while dealers are offering as low as $3.25 for No. 2 cast. Borings and turnings for blast furnace are also lower.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

New York—Scrap consumers are taking shipments against contracts sparingly and little new buying for the domestic market is being done. Some No. 1 steel is being taken on barge for $5.50 against an export order, but the Buffalo district consumer is taking little. With the opening of the canal it is estimated that more than 15,000 tons will move. Supply officer, navy yard, Brooklyn, closes bids April 21 on the sale of 927 tons of ferrous and 85 tons of nonferrous metals.

Philadelphia—Several nominal reductions in quotations on steel and iron scrap have been made. The market is dull and movement to pipe foundries is especially slow.

Buffalo—A sale of 1000 tons or more of cupola cast is rumored. While the price is withheld, $7.50 is the probable quotation. There is some belief that this transaction, the first of any size in the past 60 days, may establish an actual instead of a nominal price. This price, if true, is 50 to 75 cents less than was paid late in 1931 for this same grade.

Pittsburgh — Poor demand and nominal prices generally prevail in the iron and steel scrap market. No mills have made important purchases recently, sales being confined to small lots, mostly of the distress variety. Heavy melting steel continues $10 to $10.50, with recent railroad offerings reported to have brought the higher figure. Blast furnace material and machine shop turnings are in light demand and quotations are nominally easier.

Cleveland — Further dullness in the iron and steel scrap trade, shipments reaching an even lower rate, has led to declines in several quotations. Heavy melting steel is reduced 25 cents and cast scrap, compressed sheets and turnings are lower.

Detroit—Steel scrap offerings of two motor plants have been extremely steady and the general tone of the market is unchanged. Chevrolet scrap offerings this month are expected to be fully as large as last. Transactions have been at published quotations on all grades.

St. Louis—Steel and iron scrap is in small demand and shipments are at a lower rate than during March. Buying is in small lots for immediate use. Prices show slight change, a few grades being marked down.

Cincinnati — Important consumer bookings of scrap iron and steel are lacking in the market here. Quotations are nominally unchanged.

Toronto, Ont.—Demand for iron and steel scrap is spotty and confined to special grades. Most dealers report no demand for heavy melting steel, turnings or other steel lines. Iron scrap has steady call in machinery cast, stove plate and wrought scrap. Dealers are out of the market except for certain special grades and price lists are unchanged.

France Fixes Sheet Quotas

Washington—Import quotas, for the second quarter, of black iron or steel sheets, uncut, have been fixed by France at 3150 metric tons from Belgium, and 390 metric tons from all other countries; black iron or steel sheets, cut, 993 metric tons from Belgium, Germany and the United Kingdom, and 42 metric tons from all other countries. Iron or steel sheets intended for naval construction are exempted from the import quota restriction.

Much unworked hematite ore is reported south of Stanford in the northeast border of Little Belt mountain, Montana.

Coke

Demand Lighter — Consumers Hold Down Stocks — Labor Trouble Arouses More Interest

COKE PRICES, PAGE 58

Pittsburgh—Foundry coke demand is light and smaller than during the preceding several months. The domestic heating coke market is affected by occasional periods of cold weather. Spot demand for furnace coke is almost entirely lacking and shipments against contracts are light. Coal producers note a slight improvement in business as a result of labor troubles at Ohio and West Virginia mines. Beehive coke prices are unchanged at $2.25 for furnace coke, and $3.25 to $4.50 for foundry grades.

New York—Most foundries in this district are operating less than 20 per cent, and demand for metallurgical coke is light. Beehive furnace coke is moving generally at $2.25 to $2.50, Connellsville, and beehive foundry coke at $3 to $3.25, Connellsville, for standard grades, and $4 to $4.50, Latrobe, Pa., for premium brands. By-product foundry coke also is unchanged at $8.76 to $9.16, delivered Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati—Shipments of by-product foundry coke fail to show improvement, and buying is restricted to carloads. Most consumers are holding inventories low.

St. Louis—The daily average of metallurgical coke shipments thus far this month is less than in the comparable period in March. Foundry operations have been reduced to about two days a week.

"Things done right are safe" is the safety slogan for 1932 of workmen of the Minnequa mill of the Colorado Fuel & Iron Co., Pueblo, Colo., which in 1931 made the best record for reduction and severity of accidents in the history of the company.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

Sheets	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, cut, to jobbers	6.50
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.75
Seamless copper	14.87½
Rods	
Yellow brass (high, full turnings)	10.25
Naval brass	11.37½
Anodes	
Copper untrimmed	12.25
Wire	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	3.25 to 3.50
Chicago	2.37½ to 2.62½
Cleveland	3.00 to 3.25
St. Louis	2.75
Heavy Yellow Brass	
New York	2.00 to 2.25
Heavy Copper and Wire	
New York	4.00 to 4.25
Boston	4.50 to 4.75
Chicago	2.75 to 2.87½
Cleveland	3.00 to 3.50
St. Louis	3.00
Composition Brass Borings	
New York	3.00 to 3.25
Yellow Brass Tubing	
Cleveland	1.75 to 2.25
Light Copper	
New York	3.25 to 3.50
Chicago	2.37½ to 2.62½
Cleveland	2.75 to 3.00
St. Louis	2.75
Light Brass	
Boston	1.65 to 1.85
Chicago	1.37½ to 1.62½
Cleveland	1.25 to 1.50
St. Louis	1.50
Lead	
St. Louis	2.00
Zinc	
New York	1.00
Cleveland	1.00
St. Louis	1.00
Aluminum	
Clippings, new, soft, Cleve.	10.50 to 11.00
Clippings, hard, Cleveland	7.00 to 8.00
Borings, Cleveland	2.75 to 3.25
Mixed cast, Cleveland	4.00 to 4.50
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt, aluminum No. 12	8.00 to 9.00
Brass ingots, 85-5-5-5	6.12½

Metals

Metals Dull Except for Fair Lead Demand—Easiness Shown in Zinc, Tin—Copper Holds

New York—The metals were dull last week with the exception of lead which was in fair demand on prospects of an improved statistical position for the industry. Prices were steady on copper, lead, antimony, nickel and aluminum but shading was reported in zinc, and tin again moved lower.

Copper—Both foreign and domestic demand for copper continued in recent small volume. Sufficient metal was available from custom smelters to meet demand at 5.75c, delivered Connecticut basis, and at 6.00c, c.i.f. European ports. The large mine producers remained out of the market or held to the nominal quotation of 6.00c, Connecticut, and 6.25c, c.i.f. European ports. Custom smelters showed no inclination to dispose of metal under the record low price of 5.75c. Copper fabricators are reported to be well covered on current restricted requirements. Demand from the automotive trade has been disappointing.

Lead—Announcement of the St. Joseph Lead Co. that it would close its Herculaneum, Mo., smelter May 1 resulted in improved sentiment in the market. The smelter produces 3000 to 4000 tons monthly and its shutdown should be reflected in a material improvement in the stock position. April consumer requirements have been 90 per cent covered and those for May 40 per cent.

Zinc—Some producers continued to ask 2.80c, East St. Louis, despite slow demand and reports that one or two sellers were offering metal at 2.75c. Production was held well in check last month. Demand from galvanizers was generally lacking.

Tin—Increased liquidation abroad and slack consumer demand in this country brought a further slump in prices to the lowest levels since 1898. Straits tin for April delivery was available during the week at 18.50c and less. The International Tin committee expects to cut production further.

Antimony—Purchasing continued dull with prices steady at 6.00c, duty paid.

Aluminum — Prices were steady but the market was quiet.

Coke By-Products Firm On Light Production

New York — Coke by-product prices are firm. Light output prevents accumulations, although buying continues below normal. Current production of benzol is moving steadily. A fair volume of phenol is going to the pharmaceutical trade, but the total movement is not large. Sulphate of ammonia continues active at unchanged prices for domestic material, although foreign stocks are offered lower.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants in

Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$1.10

Quicksilver Easy

New York—Quicksilver prices are reported easy, with $73 to $75 a virgin flask quoted on small lots. Round lots, it is reported, may be had at lower levels.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
April 9	5.75	6.12½	5.50	18.75	19.15	3.00	2.90	2.80	22.90	6.00	35.00
April 11	5.75	6.12½	5.50	18.50	18.90	3.00	2.90	2.80	22.90	6.00	35.00
April 12	5.75	6.12½	5.50	18.45	18.85	3.00	2.90	2.80	22.90	6.00	35.00
April 13	5.75	6.12½	5.50	18.45	18.85	3.00	2.90	2.80	22.90	6.00	35.00
April 14	5.75	6.12½	5.50	18.35	18.75	3.00	2.90	2.80	22.90	6.00	35.00
April 15	5.75	6.12½	5.50	18.60	19.00	3.00	2.90	2.75	22.90	6.00	35.00

Machinery

DESPITE what many believe to be the lowest ebb of machinery and equipment buying on record, a commendable feeling of optimism generally persists. A few government purchases for navy yards and engineering stations furnish the only color in a drab pattern. Inquiries for new equipment center on the cost-saving type of machine rather than on units to increase production capacity. Several auction sales of machinery have brought out unbelievably low prices. Unfilled orders for electric overhead cranes on April 1 showed a slight upward trend over the total a month ago. Equipment buying by automotive interests is disappointing.

New York—Aside from some scattered activity in governmental departments, the machinery and equipment markets are stagnant. General opinion is that little genuine recovery may be expected before fall. With industrial operating rates in the neighborhood of 30 per cent, the odds against purchase of new equipment are high.

Consolidated Machine Tool Corp., Rochester, booked an engine lathe for Boston at $7920, delivery to the navy yard. Other awards for the navy include: Step-up gear equipment, Philadelphia, Farrel-Birmingham Co. Inc., $5353; eight sets air ejector equipment and spares, Philadelphia, C. H. Wheeler Mfg. Co., $6290; metal cutting bandsaw, Mare Island, Kemp Machinery Co.

Hoefer Mfg. Co., Freeport, Ill., is low on two milling and tapping machines for Philadelphia yards and C. F. Bulotti Machinery Co., San Francisco, on two lathes for Mare Island. Bids close this week on two 3-ton overhead hand traveling cranes and one 5-ton trolley and hoist for the Pittsburgh engineer. The navy is closing April 19 on 26 arc welding sets for Brooklyn yard.

Worcester, Mass.—The equipment market continues to show no color and no trends. Reed-Prentice has closed on a lathe for the government at New York and is bidding on 12 others. Delivery date, set at July 1, gives some expectation that the order will be closed quickly.

Ford has placed an internal grinder here and Chevrolet of Toledo, O., has placed a machine. However, the automotive industry generally is not buying. Inquiry from other sources continues negligible. Sleeper & Hartley has assembled for its own use a milling machine, described as one of the largest in the country. It will be announced later to the trade.

Pittsburgh—Orders for machine tools and equipment are slow to expand despite reports of continued improvement in inquiry and interest in new installations. Orders hold in their recent light volume while inquiry is spotty. Pending work in machine tools usually involves only individual items with no large lists in early prospect.

Steel plants are considering installation of a fair volume of equipment but even in instances where actual inquiries have developed the outlook for early purchases is rather poor. Activities of engineering departments are centered principally upon cost saving equipment rather than upon installations that will provide additional capacity.

Cleveland—Reports of increased production by several of the leading low-priced automobile manufacturers have not been accompanied by any inquiries for new machinery or equipment, business in this territory being practically nonexistent. Plants in Akron and Youngstown districts are showing no interest in purchases and dealers here are coming to the conclusion that calls in these cities represent simply a waste of money. Despite these adverse conditions, a feeling of optimism persists, although it would appear problematical how long a market can exist on sentiment.

A Cleveland builder has booked two automatic screw machines for the Frankford, Pa., arsenal, at $7,391.50 each. Occasional purchases are made by the government station at Wright field, Dayton, O.

Chicago—Plant equipment inquiry is lifeless. Machine tool builders see nothing of consequence ahead at least before autumn. Western builders are completing the Ford machine tool orders, which were much lighter than had been indicated earlier. Progress is being made in the private sale of production equipment of the Jewel Electrical Instrument Co., particularly the lighter equipment. The company's toolroom equipment is being moved to Newark, N. J. Fair interest continues in used equipment, but extremely low prices result from auction sales. With the exception of one or two, jobbing machine shops are decidedly slack in business. One large jobbing machine shop recently purchased a horizontal boring mill. Prospects of equipment buying from the farm implement and tractor makers are decidedly dim.

Unfilled Crane Tonnage Shows Increase

New York—Shipments and new bookings declined in March, according to the Overhead Electric Crane institute, both classifications also reflecting business in smaller units as shown by tonnage capacity of cranes shipped and ordered. Unfilled tonnage is heavier than on the first of March.

Thirteen cranes were shipped, with a tonnage capacity of 65¾, valued at $36,768; compared with 18 units shipped, tonnage capacity 140, valued at $56,540 in February.

New orders totaled 16 cranes with a tonnage capacity of 88¾, valued at $51,941. This compared with 20 units, tonnage 144½, valued at $55,893 in February.

Unfilled orders on April 1 totaled 40 units, tonnage capacity, 874¾, valued at $411,287. On March 1 unfilled orders included 38 cranes, tonnage capacity 851¾, valued at $396,114.

Steel Tonnage Loss Is Less than Trade Feared

Although unfilled orders of the United States Steel Corp. on March 31 fell to a record low of 2,472,413 gross tons, a decline of 73,216 tons or 2.87 per cent from Feb. 29, this shrinkage was less than financial authorities forecast. Comparisons follow:

	Unfilled orders	Net change	Per cent change
1931			
Jan. 31	4,132,351	188,755+	4.78+
Feb. 28	3,965,194	167,157—	4.04—
Mar. 31	3,995,330	30,136+	0.73+
Apr. 30	3,897,729	97,601—	2.24—
May 31	3,620,452	277,277—	7.11—
June 30	3,479,323	141,129—	3.89—
July 31	3,404,816	74,507—	2.14—
Aug. 31	3,169,457	235,359—	6.91—
Sept. 30	3,144,833	24,624—	0.77—
Oct. 31	3,119,432	25,401—	0.30—
Nov. 30	2,933,891	185,541—	5.94—
Dec. 31	2,735,353	198,538—	6.77—
1932			
Jan. 31	2,648,150	87,203—	3.19—
Feb. 29	2,545,629	102,521—	3.88—
Mar. 31	2,472,413	73,216—	2.87—

James P. Marsh & Co., 2073 Southport avenue, Chicago, has changed its name to Chicago Valve & Forge Co.

Pacific Coast

Public Work Slower as Financing Becomes Difficult—Sales At Low Level—Cast Pipe Buying Is Holding Up Fairly Well—Some Bridge Work in Prospect—Prices Little Changed

Seattle—Public works projects still lead in the Pacific Northwest but municipalities and counties are handicapped by financial difficulties. Seattle has decided to complete the Diablo power project involving construction of power house superstructure, tail race, switchboards, transmission towers, etc., estimated to cost in excess of $1,500,000. Contractors must finance this and other obligations totaling $3,200,000 and accept utility bonds.

Beall Pipe & Tank Corp., Portland, is low bidder for the Wippel plant penstocks, near Ellensburg, Wash., requiring 350 tons of plates. Pittsburgh-Des Moines Steel Co. is low for a water tank and tower for the McNeil island prison. Clackamas Construction Co., Tillamook, Wash., has the contract for a 220-foot steel state span over the Chehalis river at Adna, Wash., involving 200 tons of shapes. Several other state bridges are to be awarded soon.

Wholesale jobbers report no improvement in turnover. Yakima, Wash., will open bids April 11 for 1500 tons of 16 to 24-inch cast iron pipe and Chehalis, Wash., for 75 tons of 4 and 6-inch. No other important cast iron projects have developed. A proposed improvement at Kittitas, involving pipe and a steel tank, has been postponed. The Marine water district, Bremerton, Wash., will open bids April 18, for a water system.

Sales at Low Level

San Francisco—(*By Air Mail*)—General business conditions on the Pacific Coast have changed little during the past 30 days. Sales have fallen far below the levels of the past two or three years and new inquiries are few. The largest letting went to the United States Pipe & Foundry Co., 560 tons of cast iron pipe for Oakland, Calif. The largest new inquiry is for 3728 tons of cast iron pipe for Los Angeles, bids on which will be taken April 14. Prices are fairly firm.

Consolidated Steel Corp. has booked 225 tons for a bridge for the Pacific Electric Co., Los Angeles., and Whiting Corp. was awarded two cranes for Vernon, Calif., requiring 100 tons.

Consolidated Steel Corp. took the only large plate award of the week, 400 tons for ten waste heat boilers for Vernon, Calif. Beall Tank & Pipe Co., Portland, Oreg., was low bidder on 183 tons for two penstocks for the Yakima project, Wash. Prices remain unchanged at 1.80c, c.i.f.

Cast iron pipe awards exceeded 900 tons. An unnamed interest secured 248 tons of 4 and 6-inch pipe for San Diego, Calif. An award of about 8000 tons of 12¾-inch line pipe for the Southern Counties Gas Co., San Diego, was placed with the Republic Steel Corp.

Steel in Europe

British Tariff May Be Raised—Production Is Lower

London—(*By Cable*)—Markets continue dull, with considerable ground for belief that the tariff will be increased to about 20 per cent on semi-finished steel and 30 per cent on finished steel.

Pig iron production in March was 335,600 tons from 72 stacks, a daily rate of 10,826 tons, compared with 318,100 tons from 71 stacks in February and a daily rate of 10,969 tons. Production of steel ingots and castings in March was 462,800 tons, compared with 480,600 in February. Iron and steel imports were 130,174 tons and exports 166,431 tons, compared with 252,257 and 139,777 tons, respectively, in February. Middlesbrough pig iron exports were 2625 tons in March and 5097 tons in February.

Reports from the Continent tell of increasing export difficulties and prices falling further. Belgian producers have been hard hit by French import restrictions recently put into effect.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, April 14

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON	£ s d		£ s d	£ s d
Foundry, 2.50-3.00 Silicon	$11.09	2 18 6	$ 9.72 to $10.21	2 0 0 to 2 2 0
Basic bessemer	10.61	2 16 0*	7.78 to 8.26	1 12 0 to 1 14 0
Hematite, Phos. .03-.05	12.13	3 4 0	.....	.....
SEMIFINISHED STEEL				
Billets	$20.37	5 7 6	$10.33	2 2 6
Wire rods, No. 5 gage	32.22	8 10 0	19.44	4 0 0
FINISHED STEEL				
Standard rails	$31.27	8 5 0	$28.55	5 17 6
Merchant bars	1.18c	7 0 0	50c to .51c	2 5 0 to 2 6 0
Structural shapes	1.31c	7 15 0	.51c to .52c	2 6 0 to 2 7 0
Plates, †¼ in. or 5 mm.	1.48c	8 15 0	.61c to .62c	2 15 0 to 2 16 0
Sheets, black, 24 gage or 0.5 mm.	1.48c	8 15 0	1.27c to 1.29c	5 15 0 to 5 17 6
Sheets, gal., 24 gage, corr.	1.61c	9 10 0	1.56c	7 2 6
Bands and strips	1.61c	9 10 0	.72c to .74c	3 5 0 to 3 7 6
Plain wire, base	1.44c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.86c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.86c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 3.03	0 16 0	$3.20	0 13 2

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$11.09	2 18 6	$ 9.48	240(2)	$ 9.24	330	$16.39	69
Basic bessemer pig iron	10.61	2 16 0*	7.90	200(1)	8.40	300	17.94	75.50
Furnace coke	2.51	0 13 3	5.10	129	4.48	160	5.08	21.40
Billets	20.37	5 7 6	14.62	370	11.06	395	23.64	99.50
Standard rails	1.39c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.18c	7 0 0	.90c	500	.59c	450	1.24c	115
Structural shapes	1.48c	8 15 0	.99c	550	.59c	450	1.22c	112.50
Plates, †¼-in. or 5 mm.	1.52c	9 0 0	1.17c	650	.72c	555	1.43c	132
Sheets, black	1.48c	8 15 0§	1.35c	750‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.61c	9 10 0	2.70c	1,500	1.95c	1,500	4.00c	370
Plain wire	1.44c	8 10 0	1.75c	970	1.95c	1,500	1.92c	178
Bands and strips	1.61c	9 10 0	.90c	500	.88c	675	1.44c	133

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	58	44½	⅛	25	7
¼	62	50½	¼	30	13
1—3	64	52½	1—1¼	33	17
			1½—2	37	20

LAP WELD

2	57	45½	2	25	11
2½—6	61	49½	2½—3½	30	15
7—8	58	45½	4—6	32	19
9—10	56	43½	7—8	31	18
11—12	55	42½	9—12	28	13

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+11	+46
¼	60	49½	½	25	9
1—1½	62	51½	¾	30	14
2—3	63	52½	1—2	36	20

LAP WELD

Extra strong, plain ends

2	55	44½	2	31	15
2½—4	59	48½	2½—4	36	22
4½—6	58	47½	4½—6	35	21
7—8	54	41½	7—8	33	19
9—10	47	34½	9—12	23	10
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$32.00 to 33.00
Four-inch, Birmingham	36.00 to 37.00
Four-inch, Chicago	38.40 to 42.40
Six to 24-inch, Chicago	34.40 to 38.40
Six-inch and over, N. Y.	28.00 to 30.00
Four-inch, New York	34.50 to 36.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los. Ang.	2.35c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los. Ang. cl.	1.90c
Los Ang., lcl	2.20c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl	2.80c
Seattle	3.00c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	2.35c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	2.35c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.50c
N. Y.	3.00c
Portland	3.75c
Phila.*† (e)	2.90c
Pitts.**	3.00c to 3.10c
San Fran.	3.50c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	4.10c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.05c
New York	3.50c-3.65c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.25c
San Fran.	3.95c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.35c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	4.35c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	4.75c
San Fran.	4.35c
Seattle	4.75c
St. Louis	4.35c
St. Paul	4.19c
Tulsa	5.10c

BANDS

Baltimore	3.25c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.25c
San Fran.	3.75c
Seattle	3.25c
St. Paul	3.20c
Tulsa	3.45c

HOOPS

Baltimore	3.25c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	4.75c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.50c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
‡Domestic bars.
*Plus quan. extras.
**Less than 25 sheets.
*†50 or more bundles.

A Product Research Department

THE crystal ball may guide men of other races, but we Americans place our futures in the hands of science and research. There are still, unborn, thousands of new products which will be made of sheet steel. They offer new business, new profit for the fabricator.

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2 It will help you adapt ideas of your own.

3 It will analyze market opportunities for products you are not now making but could make and sell profitably.

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Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

WEYMOUTH, MASS. — Crawford Machine Co., Central avenue, is having plans made for rebuilding its 2-story plant, recently burned. Cost $50,000.

New York

BUFFALO—New York Telephone Co. has had plans drawn for a concrete and brick central office building at 2035 Bailey avenue, to cost $100,000.

ELMIRA—Southern Tier Bronze & Steel Co. has been incorporated with 200 shares common stock, by D. N. Heller, Elmira.

JAMESTOWN — Jamestown Metal Furniture Co. has been incorporated with $5000 capital by W. C. Price, Jamestown.

NEW YORK—Rechter Transmission Co. has been incorporated with $10,000 capital to operate a machine shop, by A. M. Schachner, 115 Broadway.

NEW YORK—B. & S. Metal Works has been incorporated with $20,000 capital, by D. Stern, 2 Lafayette street.

New Jersey

VINELAND—Ferro Pipe Co. has been incorporated with $100,000 capital to manufacture iron and steel pipe castings, by Tuso & Stanger, Vineland.

NEWARK — Interstate Industrial Equipment Inc. has been incorporated with 2500 shares common stock to do electrical engineering and toolmaking, by Samuel M. Goodman, Newark.

Michigan

DETROIT—A blacksmith shop and wheelwright shop will be built by the government at Fort Wayne, Detroit. Bids will be taken in April.

DETROIT—American Bandit Proof Door Corp. has been incorporated with $100,000 capital to manufacture bank vault doors, by Johnston Stuart, 4365 Fullerton avenue, and associates.

DETROIT—Controlweld Inc., 1141 Harper avenue, has been incorporated with $50,000 capital to manufacture electric welding machinery, by Henry W. Roth, Ferndale, Mich. and associates.

MT. CLEMENS—Cadillac Can Co., manufacturer of tin containers and metal specialties, D. A. Walker, New Baltimore, O., Harrison, O., postoffice, plans to move its plant at Mt. Clemens.

Illinois

CHICAGO—Allen Heater Co. Inc., 17 South Michigan avenue, suite 2015, has been incorporated with $1000 capital to manufacture automobile water heaters by H. C. and Charles Glimm and associates.

CHICAGO—General Devices Corp., 2316 Cottage Grove avenue, has been incorporated with $40,000 capital to manufacture electrical devices, by John Laux, 10 South LaSalle street.

CHICAGO — Van Dorn Railway Supply Co., 2325 South Paulina street, has been incorporated with $20,000 capital to manufacture railway cars, wagons and auto trucks, by Herbert E. Van Dorn and associates.

Southern States

NATCHEZ, MISS.—O. L. Hazelwood, engineer, is preparing plans for an airport at Natchez.

MEMPHIS, TENN.—D. Shea Boiler Works, 1106 Kansas street, will rebuild its burned plant, at a cost of $55,000.

Missouri

ST. LOUIS—City Foundry Co., Park avenue and Ninth street, will rebuild its burned foundry at a cost of $45,000, which includes replacement of equipment.

Arkansas

NORTH LITTLE ROCK—Nelson Electric Co., Fort Scott, Kans., has taken a contract for construction of an electric distribution system at the United States veterans' hospital here, at $30,000.

Oklahoma

OKLAHOMA CITY — Snetcher & Pittman has been incorporated with $20,000 capital to operate a machine shop, by P. R. Snetcher, 901 Southeast Twenty-ninth street.

OKLAHOMA CITY—State Board of Affairs, state capitol, is having plans made for a power house unit, 60 x 175 feet, at the branch prison at Stringtown, Okla.

OKLAHOMA CITY—Major Oil & Refining Co., C. H. Fox, 2329 North Flynn street, president, has taken over the refinery of the Crump Refining Co. and will rehabilitate it for early operation.

TULSA—Texas Pipe & Tool Co. has been incorporated with $10,000 capital to operate a pipe machine shop, by R. E. Sigmon, 734 North Trenton avenue.

Texas

DALLAS—United States Cold Storage Co., C. M. Dodds president, Kansas City, Mo., plans to build a cold-storage plant here to cost $1,000,000. Refrigeration machinery will be purchased.

GLADEWATER — Clark Tool Co. has been incorporated with $10,000 capital to operate a machine shop for the repair of oil field tools, by Fred Korp, manager.

MC ALLEN—Valley Refining Co. has been incorporated to take over and remodel an old oil refining plant. Walter K. Campbell, 2006 Avondale street, is president.

SAN ANTONIO — Western Pneumatic Co., 1541 West Mulberry street, Harry Pennington, manager, has been incorporated to design and manufacture machinery.

Wisconsin

MILWAUKEE — Lemke Electric Co., 635 North Eighth street, manufacturer of electrical equipment, suffered loss of $80,000 by fire. Business is being resumed in leased quarters pending rebuilding.

Idaho

BOISE—State highway department has decided to replace bridge over Kootenai river at Bonners Ferry by a $150,000 structure. J. H. Stemmer is director.

Pacific Coast

KLAMATH FALLS, OREG.—California-Oregon Power Co. is about to undertake a program of improvement and expansion to cost $78,700.

SEATTLE — Washington Iron Works, Airport Way, will rebuild its burned plant, cost $70,000.

SEATTLE—Reliance Iron & Wire Works, 1327 Weller street, Ben Herz president, will rebuild its burned plant.

SEATTLE — Metaline Machine & Mfg. Co. has been incorporated with $5000 capital to manufacture machinery, by C. E. Erickson and M. M. Wilson.

Dominion of Canada

VANCOUVER, B. C.—Burrard Inlet & Tunnel Co. is seeking official approval of plans for a $900,000 steel lift span for Second Narrows, here.

LONDON, ONT.—Bids will be taken immediately on sludge pumps, screen press and flume for alterations and additions to east end sewage disposal plant. W. P. Near, city hall, is engineer.

MONTREAL, QUE.—Walker-Hind-Sutherland Refractories Ltd. has been formed and will establish a plant here to manufacture acid-resisting cements, plastic bricks, R. Walker, general manager.